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T. B. Chase, Esq.

Jan. 16. 1905

F. E. DANIEL, M. D., PRESIDENT.

TRANSACTIONS

OF THE

STATE MEDICAL ASSOCIATION

OF TEXAS

THIRTY-SIXTH ANNUAL SESSION

AUSTIN, TEXAS,

APRIL 25, 26, 27, 28 AND 29,

1904.

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STATE MEDICAL ASSOCIATION

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1904.

NOTE.

The Association does not hold itself responsible for opinions enunciated in papers and discussions herein published.

I. C. CHASE,
Secretary.

PRESS OF
VON BOECKMANN-JONES CO.,
AUSTIN.

PREFACE.

The large increase in membership of the State Association in 1903 and 1904 was attended by the presentation of nearly twice as many papers at Austin as were read the year previous. The sum per capita available for the publication of the Transactions at the same time largely decreased. To have published a complete report of the work at Austin would have required two volumes of 500 pages each. The Committee on Publication has found it necessary for these reasons to reduce and condense the material, guided by the following rules:

1. Omit all papers consisting of routine text-book material and those of little scientific interest.

2. Cut all introductions, apologies, digressions and other matter foreign to the theme.

3. Strike out all addresses and lengthy discussions not bearing on medicine.

4. Reject all manuscripts from guests outside the State, as well as from members of the Association not present to read papers in person, unless such papers are of exceptional value.

5. Condense all papers longer than allowed by the constitution, or, if not possible, reject, unless papers contain result of original work.

6. Omit all discussions of papers not returned corrected by the authors.

The committee has attempted to perform the duties laid down in chapter VIII, section 4, of the by-laws faithfully and impartially. They hope the volume may meet the approval of the Association, and that none may feel injustice has been done.

I. C. CHASE,
W. R. THOMPSON,
D. R. FLY,
Committee on Publication.

132022

ARTICLES OF INCORPORATION

OF

The State Medical Association of Texas.

Know all men by these presents: That the undersigned have associated themselves and do by these presents associate themselves for the purpose of forming a corporation under the following articles of incorporation:

1. The name of said corporation shall be "State Medical Association of Texas."

2. The purposes for which said corporation is organized are as follows: To organize the regular medical profession of the State of Texas, and to encourage a high standard of professional qualifications and ethics; promote professional brotherhood and advance State medicine, *i. e.*, public hygiene, medical education, medical jurisprudence, and public institutions for the sick and infirm.

3. Said corporation shall transact its business in the State of Texas, and have its principal office and place of business in the city of Austin, Texas.

4. It shall exist for fifty years.

5. Its Board of Directors or Trustees shall consist of five members, and the names and places of residence of those to serve the first year, respectively, are as follows: B. E. Hadra, Dallas, Texas; Taylor Hudson, Belton, Texas; R. F. Miller, Sherman, Texas; H. P. Cooke, Galveston, Texas; H. A. West, Galveston, Texas.

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ANNUAL PRESIDENTIAL ADDRESS.

FRANK PASCHAL, M. D., SAN ANTONIO.

ANNUAL ORATION.

H. A. BARR, M. D., BEAUMONT.

PRESIDENT'S ANNUAL ADDRESS.

FRANK PASCHAL, M. D., SAN ANTONIO.

Ladies and Gentlemen:

It is not my purpose to trace the origin of diseases which began, no doubt, when the mythical Pandora opened the casket and liberated the germs that have ever since afflicted the human race; but it is to say something of that well worn subject of doctors and their relation to the public. In speaking of them it will not be of Æsculapius, or Apollo, or Hippocrates, or Galen, or other great men who have adorned our profession—it will be of those who are dearer to us—of the medical men of our own great State of Texas. They, by their professional attainments, their struggles against hardships, their unswerving devotion to duty, and their achievements in benefiting the people of this commonwealth, are justly entitled to the highest praise, and to be ranked foremost amongst the greatest benefactors that this State has ever known.

The State Medical Association has met here today for the first time since adopting the plan of organization, approved by the American Medical Association. It is a source of pride and pleasure to know that fifty-one years ago the State Medical Association of Texas was born in this city, Austin. The plan under which we are now operating is similar to the one of 1853, which provided that county and district associations should be subordinate branches of the parent association, and that county societies should be chartered by the State Association upon the recommendation of the Councilors, exactly as is required now. In proof of this I submit the charter granted in 1853 by the State Medical Association to the Bexar County Medical Society.

Brief History of the Association.—On the 17th of January, 1853, about fifteen physicians met here and organized the State

Medical Association of Texas. A charter was granted by the Legislature to the Association, legalizing its existence and constitution. "The object of the Association was the organization of the qualified medical practitioners of the State, for the purpose of insuring unity of design and concerted action in devising and carrying into execution such measures as would conduce to the general welfare and improvement of the profession, and the exclusion from its ranks of unworthy and unqualified persons.

The first annual meeting was held in San Antonio, November 16, 1853. Doctor George Cupples was the President of the Association, and delivered the first and one of the most scholarly addresses in its history. His opening remarks are as appropriate today as they were fifty-one years ago, although conditions have greatly changed, and I will, therefore, quote them:

"Of all the elements of progress to which the present age owes its unparalleled advance in every department of science and of art, none is more marked, more characteristic of the times in which we live, than the spirit of the association and of concert of design in the attainment of results far beyond the reach of individual enterprise or of isolated exertion."

The co-operation of various associations in different parts of the world has diminished distance by improved modes of conveyance by land and sea. The whole extent of this Union and of the continent of Europe is harnessed by railroads conveying travelers with a rapidity undreamt of by the last generation.

They were dreaming in 1853 of the things that have long since become realities. These brave patriots of medicine journeyed over long and weary miles in buggies and on horseback to meet here,—they were heedless of the dangers that beset them from wild savages then roaming over this section of the State,—they were unmindful of the inconvenience of sleeping on the ground, with a blanket for a bed, a saddle for a pillow, and a rifle for a companion, and for a canopy the limitless dome with stars, like dewdrops on the field of Heaven, keeping their vigil; the silence of the night unbroken, save by the cry of wild beasts. No selfish motives prompted them

to undergo hardships and brook dangers. They were actuated, as our profession has been from the time that it broke the shackle that bound it to ignorance and superstition, by an earnest desire for the acquisition of knowledge to be used in the prevention and cure of diseases, in the amelioration of suffering, and in the prolongation of life. The mission upon which they were bent was right, and on the firm center lay the moveless base upon which this magnificent organization has been built, and which compares favorably with any of its kind in this or any other country.

Doctor Cupples said, "The Medical Association of Texas was established, not from any sudden impulse, for the purpose, as has been facetiously conjectured, of raising the fees, or of securing a monopoly, but in prosecution of a plan long contemplated by many physicians in this State, of whom that distinguished ornament of our profession, Doctor Ashbel Smith, was one."

What a contrast is the 1904 to the 1853 meeting! We should indeed feel proud of the efforts of those pioneers of the profession and should honor and revere them and aid in engraving their memories upon the heart of every physician, now and forever.

The sparsely settled condition of this State in 1853 was not conducive to the prosperity of the Association, and it failed to continue its annual meetings. The changes wrought by time are as many and varied as those seen in the kaleidoscope—

> "So often do the spirits
> Of great events stride on before events,
> And in today already walks tomorrow."

On the 15th of June, 1869, the Association was reorganized in Houston, and some of those who assisted in organizing the first association joined again. Dr. J. H. Heard was the first president. From 1869 to 1878 there were very poor facilities for transportation, but stage coaches were well patronized by members attending the annual meetings, which have been held regularly since 1869.

Here we find another example of the devotion of our profession

to duty. The Civil War had been over but a few years when many of the physicians who had served with distinction met once more to fight common foes—disease and death. These gallant non-combatants in war had returned home wrecked in fortune, their State impoverished, and the cause which impelled thousands of the sons of the South to take up arms—lost! On battlefields, while engines of war hurled their missiles of death and destruction, and men were falling dying and wounded, the physicians who met here in 1853, and in Houston in 1869, were ever found where duty called them—in the midst of the thickest of the fight, bent upon errands of mercy, relieving suffering and nursing back to life friend and foe. There are physicians present who organized the Association in 1869 to grace this meeting. They did not allow misfortune to interfere with their devotion to the best interests of society. Perhaps hardships were entailed upon some in attending the annual meetings, yet to do so they willingly sacrificed time and money. With such men as the conservators of this Association, how could aught but good result to the public and the profession, and the Association prosper beyond the most sanguine expectations?

Since its organization in 1869 the Association has steadily increased in membership, importance, and influence, and the benefits that it has been instrumental in securing for the public and the profession can no longer be doubted, even by the most skeptical.

It was found that the independent plan under which the district and county societies throughout this State were operating,—they were independent, and owed no allegiance to the State Association,—was not unifying the profession. It was decided at the meeting held in San Antonio (1903) to organize the Association on the plan recommended by the American Medical Association, viz.: by creating a county society in each county, and, in sparsely settled counties, by hyphenating two or more counties to form a society. The county society being the unit of organization, with but one chartered society in a county. Membership in the county society constituting membership in the State Association. Thus the county society guards the portals of entrance to the district,

State and National associations. It is the most important branch of the organization, as the county society must pass upon the qualifications of the members of the State and National associations.

The broad and liberal plan of the State Medical Association makes it possible for any qualified physician who does not practice, or claim to practice, a sectarian system of medicine to become a member of the county, district, State and National associations; and those remaining aloof from uniting with their colleagues do so either from stubbornness or animosity towards individual competitors. It is not the intention now, or has it ever been, for members of our profession to be coerced into uniting with medical organizations, but "in union there is strength," and by being a united profession, we will be better able to secure medical legislation, and thereby conserve the best interests of society, and to become more efficient within ourselves, and better prepared to obtain knowledge and bestow it upon those who trust us to cure and prevent diseases. By being united we can raise the standard of our profession to that high plane which its honorable history, traditions and usefulness justly entitle it. Many who formerly practiced a sectarian system of medicine have renounced it, and joined the regular medical profession, and have become zealous members of our medical societies. To them the cold shoulder of non-fraternalism has been exchanged for the strong hand-grasp of fellowship. Our calling is humanitarian and merciful, and physicians should be broad minded and discard everything that has the slightest resemblance to littleness, and fight bravely for the upbuilding of the profession that it may reflect honor upon us,—a profession whose good deeds can not be numbered, but so bestowed as to be held in everlasting remembrance and undying appreciation by a grateful people.

Medical Legislation.—Of the measures presented to the Legislature for its consideration, there are none more important than those appertaining to medical legislation and none more difficult to secure into enactments. All matters of medical legislation concern the best interests of our citizens, because they directly affect

human life and commerce. The failures in the past in obtaining laws we advocated were principally due to the opposition of those who, for selfish reasons, were instrumental in defeating them, to a misunderstanding on the part of legislators of their real importance, and to a lack of concerted action on behalf of the members of our profession. Hence when laws were sought we were un-united, and had no solid phalanx fighting for them, though advocated by our State Medical Association. The majority of the profession did not lend their best endeavors in this direction, but left the burden to be carried by a few. In future far more interest will be displayed in getting laws. The constitution of our Association provides for three members on Legislation and Public Health in each county society, also for the State Medical Association Committee on Legislation and Public Policy, and besides these, there is the Legislative Committee of the American Medical Association. From now on, any legislation we advocate, State or National, will receive the influence of the county, State, and National associations.

It is, indeed, difficult for the ordinary mind to understand why enactments should be sought for the protection of the public, which are apparently directly against the best interests of our profession. Our foremost duty as physicians is to prevent disease whenever and wherever we can, this being the most direct way by which we can serve God and our fellowmen. Our efforts in behalf of society are becoming better understood and appreciated, and the day may come when the measures our profession advocate will receive the consideration and cordial support of the legislative bodies throughout the length and breadth of this land. It will always be the policy of the State Medical Association and the medical profession to advocate, recommend, and use their influence in conserving the best interests of the people, but never for individual aggrandizement or for selfish purposes. To illustrate the difficulties in securing medical legislation, I will point to the fact that from 1853 to 1901, our profession endeavored repeatedly to secure a law to prevent the indiscriminate practice of medicine by

unworthy and unqualified persons. In 1853 a bill for this purpose was introduced in the Lower House by Colonel Fields, of Liberty. It failed to pass. Time and again bills were introduced for creating a State Board of Medical Examiners, and were unsuccessful, and it was not until 1901 that the present law was enacted.

The law regulating the practice of medicine, prior to the existing one, when district medical boards were created by district judges, was the means of allowing hundreds of men with absolutely no knowledge of medicine to be turned loose upon the community to engage in the great and responsible calling of caring for human life. Under this lax law the bogus diploma business was such a money-making enterprise that mills began to grind out doctors in six weeks' time. Some of these mills were operating under a charter of the State of Texas, and the graduates of these schools were equal, under the law, to the graduates of the Medical Department of the University of Texas, which requires an attendance of four years on lectures. Its competitors had no fixed curriculum, but were ready to confer the degree of M. D. upon any one who would pay fifty dollars, regardless of race, sex, or color. The outrage that was being perpetrated upon the public by one of these institutions, the New York Medical College of San Antonio, whose faculty consisted of a doctor, his wife, and six-year-old child, and a number of professors who signed M. D. after their names and were not physicians, but professors of medicine, was, through the influence of the West Texas Medical Society, brought to the attention of Governor Sayers. He manifested a deep interest in the matter and advised with the Attorney General regarding the squelching of the bogus concern. The only way that this could be done was to prove an abuse of the privileges of the charter. A colored man matriculated in the school, and in six weeks' time was made a full-fledged M. D. with all the rights to practice medicine as herein set forth in this diploma. It is a beautiful piece of lithographic work, but like many of its kind, of no value. I simply show it to prove that a diploma can not be relied upon to bespeak merit, therefore the wisdom of the present law, which does not recognize a diploma

as a sufficient requisite for the practice of medicine. One shudders to think of life intrusted to incompetent and unscrupulous persons.

The present law makes the State Medical Association responsible for the Board of Medical Examiners. Every two years eighteen members are selected by the Association, and nine of these are appointed by the Governor to form the Board. Since its enactment three years ago 381 have been examined and 303 passed and 78 failed. It has been instrumental in keeping out numbers of incompetent men from practicing upon the ignorance and credulity of the people, for revenue only, and also of raising the standard of teaching. Unquestionably the present far excels all previous laws regulating the practice of medicine, but it is still defective, in as much as it allows the public to be imposed upon by the so-called "drugless doctors." Experience has shown that these are quack-cure frauds and humbugs. They are not required to pass an examination of any kind, while those who practice legitimate medicine must, and rightfully so, pass an examination before one of the three State Boards of Medical Examiners, regardless of the school from which they graduated. This State allows those who are credulous to be imposed upon by the mind curer, faith curer, mental-science curer, metaphysical healer, Christian Science curer with its absent treatment, hypnotists, enchanters, alchemists, astrologers, magicians, sooth-sayers, telepaths, divine healers, and osteopaths, all claiming to possess miraculous gifts in curing disease. It is to be regretted that the press, the exponent of the times, the molder of public opinion, the greatest educator by far that the world possesses, will lend itself, for the dollars and cents revenue derived therefrom, to the publication and dissemination of the rankest and most fraudulent advertisements of these cure fakirs that can possibly be expressed in language. There are persons foolish enough to be gulled by fortune tellers and made to give up gold and jewels to be "magnetized," and fleeced out of them. Is it then surprising that those suffering from real or imaginary ills, who are easily influenced by the untruthful claims of these wonderful healers, should patronize them? It is not the pity one feels for those who

have arrived at the age of maturity, and do not protect themselves against such impostors, that impels us to demand that the strong arm of law should be invoked, but it is that protection may be given to the helpless babes and children, whose lives are frequently jeopardized by these numerous pretenders, masquerading under different names. They take upon themselves the responsibility of curing (this class never treat, they always cure) such diseases as diphtheria, pneumonia, meningitis, appendicitis, in fact all diseases which require knowledge and skill to diagnose and intelligently treat. If these "drugless doctors" are entitled under the law of our State to practice the healing art, they are equally entitled to receive the recognition of the State, municipal, and county authorities and to be appointed health officers and members of health boards. It would seem, therefore, only right and just that the law should exact of everyone who pretends to practice medicine to display some knowledge of its fundamental principles. Drugless doctors are recognized by law, and are by law competent to form boards of health. They should be required by law to know something of diseases and hygiene. The mere fact that no drugs are given does not render the danger to the community any the less, but equally as great as if they gave drugs and were unqualified. I do not hesitate to say that the neglect to impose a punishment for homicide by incompetent and ignorant people of the drugless kind is not less culpable than would have been the omission to decree a penalty for murder or manslaughter by deadly weapons.

To illustrate the class of institutions from which some of those practicing medicine of the drugless class belong, I will quote from the opinion of Hon. Sterling B. Toney in a judicial inquiry into osteopathy and its claims, in the case of Nelson vs. The State Board of Health of Kentucky. Judge Toney makes the following statement:

"The school is made a corporation, and the officers of the corporation, by its charter, are only such as the said Board of Trus-

tees (composed exclusively of the Still family) shall from time to time deem necessary and appoint.

"Referring to this charter as a production of said Doctor A. T. Still, the president, at page 6 of said catalogue, the following language appears:

" 'In this way has the keen insight of Dr. A. T. Still into the future possibilities of osteopathy, and his entire and unreserved devotion to the interest of this child of his brain, been exemplified in tangible form and provision made for the development and promulgation of the science on a basis at once broad, liberal, and permanent.' Thus it will be seen that the charter establishes a corporate Still Syndicate—a Still Trust in Osteopathy, at Kirksville, Missouri.

"The catalogue further shows that there are fifteen professors in the faculty, of whom four are members of the Still family. All of the faculty have the letters D. O. after their names, which, it is presumed, means 'Doctor of Osteopathy,' but only three of them have M. D. after their names.

"The proof shows that the visiting committee from the State Board of Health found that the institution was destitute of the essential equipment, apparatus, appliances, and facilities of the college for teaching medicine and surgery, or any healing art. For instance, in the room of said institution for teaching anatomy the proof shows that plates were used, with a mummyized cadaver which was kept constantly on hand, and which had been rendered so hard by the process of embalming that nothing but a cold chisel could make an impression upon it. A painted wooden Indian used for a cigar store sign would answer the purpose for demonstrating anatomy just as well.

"Dr. William Smith, the professor of anatomy, the pride and flower of the faculty, was a commercial traveler. This Dr. Smith, the proof shows, is under several indictments in the city of Chicago for felonies. That he has also been indicted in Adair county, Missouri, in which county the American School of Osteopathy is

located, for felony. Dr. Arthur G. Hildreth testifies that he is an osteopath and a graduate of the American School of Osteopathy at Kirksville, Mo.; that osteopathy treats all diseases by manipulation—that he knows nothing of antitoxin or the treatment of diphtheria with antitoxin. The plaintiff, Dr. Nelson, testifies that osteopathy cures all diseases except cancer, syphilis and consumption; that he treats Bright's disease and diabetes by manipulation, stimulating the renic splanchnic; that he treats diphtheria by manipulation, stimulating the vasomotor center in the back of the neck, and by putting the finger down the throat of the patient and manipulating the soft palate or fauces; that the treatment of scarlet fever, lockjaw, milkleg, varicose veins, dropsy, retention of urine, piles, fistula in the rectum, anal fissure, acute rheumatism, hip joint disease, simple, benignant, and malignant tumors, chronic syphilis, eczema, shingles, carbuncles, bone felons, bruises, puerperal convulsions, flooding after child-birth, laceration of the cornea of the eye, all by manipulation, but he refuses to state how, or in what manner, this manipulation is applied.

"Gassner was a wonder doctor, a sort of wild medicine man in Switzerland in the eighteenth century. He effected his cures alone and exclusively by manipulation. He was the original osteopath, and, were he living, could sue Dr. A. T. Still for infringing his patent, or pirating his trade mark. Out of forty-four States in the Union, it appears in evidence that but four or five States have authorized or allowed the disciples of osteopathy to practice their calling within their borders. The testimony of the plaintiff's witnesses in this case show that they do not teach, nor profess to teach, medicine and surgery in the American School of Osteopathy. How can it be called a reputable medical college when its own professors repudiate and refuse to teach materia medica, therapeutics, chemistry, anatomy, and physiology, and confine themselves alone to manipulation? It is singular, indeed, that in an enlightened age like this such schools and disciples can find recognition by the laws of any State."

To reach these drugless doctors, and yet do them no injustice,

the law of this State might be so amended as not to require them to be examined in materia medica, therapeutics, or chemistry, but in all the other branches. Our intelligent legislators will undoubtedly awaken to the importance of this matter and correct the evil that now exists. It is our duty as physicians to continue calling attention to the injustice that is now imposed upon the people of this State until the evil is remedied.

At the last session of the Legislature it was sought to amend the present law that it might apply to drugless doctors, and all those who pretend to practice the healing art. The measure was ably championed by Senator Marshall Hicks and Senator Davidson of DeWitt. It never came to a vote. Let us hope that a law will be enacted which will protect the community against imposition by drugless doctors.

Public Hygiene and Quarantine.—Unquestionably the most important subjects that should receive legislative consideration are those appertaining to public health and quarantine. The law regulating quarantine, as it stands today, is far from satisfactory. Every county in this State has the right to decree a quarantine against another county without the leave or sanction of the Governor or State Health Officer whenever in opinion of the county commissioners and county health officers some infectious or contagious disease justifies such action. The county health authorities are superior under the law to the State Health Officer.

As an illustration of this, the yellow fever episode of last year will serve full well. Trains carrying food were not allowed to pass through one county into another county, but were held up with shot guns by the county authorities. It has been stated that a well of water happened to be just across a county line and water could not be taken from it by residents of the other county without those going for a bucket of water being placed in quarantine camp for five days; also that a graveyard was just across a county line, a man's wife died, and the husband was told he would be allowed to bury his wife in the graveyard, but that *he* would have to go into quarantine camp for five days. It was demanded that carloads

of ice should be disinfected; that iron machinery should be fumigated; that letters should be perforated, and newspapers headlined "Fumigated" before they could be sent by mail. Indeed, it would be impossible to even attempt to recount the foolish occurrences connected with the quarantine last year. The hardships and privations that hundreds were subjected to will never be known, but long remembered by those who had to endure them.

The interruptions and commercial losses occasioned by quarantining against infectious but controllable diseases are too great to be tolerated. Our knowledge concerning the propagation of yellow fever and other infectious and communicable diseases has been obtained after the most searching and convincing investigations made both in this country and in Europe. They are of a nature to enable us to employ intelligently and effectively scientific and rational measures in preventing their spreading. We should accept the facts derived from these investigations, and relegate to the dark ages obsolete theories, and not continue perpetuating measures employed when we were ignorant of their causation and manner of dissemination. If interstate and municipal quarantining against yellow fever is continued, we must acknowledge that it will be either from fear of public censure, or from unwillingness to accept as positive the demonstrated proof that yellow fever is not conveyed by fomites but by the mosquito. We should stand or fall by truths. Can we accept the results obtained at Havana, which was formerly a hot bed of yellow fever, and where today it has practically ceased to exist, as being due to the application of rational measures in handling the disease? If we can, we certainly ought to apply them wherever yellow fever is encountered.

I see no more reason why cities in the South should suffer by quarantine against yellow fever than that New York or Philadelphia should do so. Yellow fever has visited Philadelphia and New York, and is liable to invade them again. If it should, could the commerce of these great cities be stopped by quarantine? I believe not.

If we accepted the scientific teachings of the day relative to

the causation and propagation of yellow fever, and other communicable diseases, and acted accordingly, it would inspire more confidence in the public and prevent upsetting commerce and the uncalled for criticisms and censure of boards of health, health officers and physicians who dare express their belief regarding the existence of these diseases.

Whenever yellow fever visits a city our health authorities are held up to ridicule, to threats, and abuses by those who, though ignorant of the disease, flaunt their knowledge of it before the public and their great ability to diagnose it by no other means than by the smell. Unfortunately a division of sentiment amongst members of our own profession has proverbially occurred wherever this disease has made its appearance, some claiming it to be yellow fever, and others that it is not. This is caused by quarantine and its injury to commerce, and not from the actual dangers to human life. If rational measures were employed in handling the disease it would be more easily controlled. Physicians who now hide their cases from health authorities for fear of criticism, or on the presumption that they are doing the commercial interests of their community a good deed, and expect thereby to receive commendation, would probably take the necessary precautions to prevent others from being infected, by reporting their cases, and would not allow them to remain hidden and continue a menace to the public health.

I offer in proof that land quarantine is not effectual the following: In 1900 the city of Laredo was quarantined to prevent the spread of smallpox; to enforce it blood was shed; the quarantine did not prevent smallpox from spreading to other places. Yellow fever has spread both north and south in spite of quarantine, thus showing that land quarantine can not be relied upon to prevent the introduction of contagious and infectious diseases. No one supposes for a moment that when a place is invaded with yellow fever that the first cases are diagnosed correctly and reported. The disease, I venture to say, has existed for days, perhaps weeks, before it becomes generally known, and during all of this time

thousands of people have come and gone, conveyed with almost lightning speed by land and sea, and have stopped at nearby villages and far away cities, taking with them infection, if infected. It can be safely said that most every village, town, and city in a State will have been exposed to the possibility of infection from yellow fever time and again long before the places which had the greatest number of cases were quarantined. During the unknown existence of the disease travel is normal, people coming and going without fear; but once the knowledge gained that quarantine would be, or had been, placed, then travel becomes abnormal, stampedes begin, and afterwards, exit from the quarantined places made by deception and stealth. Communities under such conditions are like the fabled ostrich, who when pursued buries its head in sand and thinks itself safe from its pursuers. A maritime quarantine is a different proposition, and should be enforced. I do not hesitate to venture the assertion that the day will come, and it's not distant, when land quarantine against infectious and contagious diseases, except under special conditions, will cease, and in its stead, rational and scientific methods will be employed to prevent and combat diseases in the invaded localities.

It is well known that if we had the power and money we could stamp out forever many infectious and contagious diseases, but these requisites are impossible of attainment. Therefore rigid local measures, education, and legislation must be depended upon as the rational and scientific way of preventing communicable diseases doing the least possible harm.

The United States Hospital Marine Service is performing a great work in protecting public health. On account of State rights it can not assume control and aid to the full extent that it is willing to do. Its object is not alone the protection of the public health of a community, but of the nation, and to prevent interruptions to commerce in this and foreign countries. It would be impossible to approximately estimate the millions of dollars the United States government spends annually for this purpose.

Our State should make more liberal appropriations than it has

done heretofore if it expects to prevent the spreading of contagious and infectious diseases. The amount at the disposal of the Health Officer its entirely inadequate. Counties and municipalities in this State are not financially prepared to expend the vast sums required to cope with such a disease as yellow fever wherever it makes its appearance. The State, it would seem, should financially aid in stamping out diseases. Human life demands it, and commerce should not suffer.

No one doubts for a moment the demonstrated ability of our State Health Officer, Dr. Tabor, in protecting public health against yellow fever and other communicable diseases. He is not to blame for the perpetration of absurd and irrational acts of others; the law does not enable his preventing these occurrences.

Board of Health.—A better law relative to public health and quarantine should supersede the present one. The creation of a Board of Health has been recommended time and again by our Association. Possibly a Board of Health composed of physicians, a member of the legal profession, and a civil engineer would be acceptable to the public. The method of creating the board should be taken out of politics, and the State Medical Association and the State Bar Association should submit names to the Governor to select from, on a plan similar to the one creating the State Board of Medical Examiners.

The State Board of Health should have jurisdiction over all matters relating to the public health and quarantine, and should be empowered to promulgate rules and regulations for the prevention of contagious and infectious diseases, and to establish and annul quarantine, and do such other acts as may be necessary to protect public health. The State should make it a part of its duty, through the State Health Officer, acting as the executive of the Board of Health, to see that cities and counties enforce efficient measures for the protection of the public health, not alone against one, but against all acute infectious and contagious diseases.

Adjudging the Insane.—Another measure that would seem to require the consideration of our Legislature is a better way of

adjudging the insane. This has received the study of the ablest alienists, and they recommend the abolition of the jury system, and that the insane be examined by professional men, and their malady certified to, as any other disease would be. If this method was adopted those who commit criminal acts would not be apt to escape on a plea of insanity, and justice would not be defrauded; while on the other hand our penitentiaries would cease to have within their walls many who should be in asylums. With competent and skilled physicians, well versed in nervous and mental diseases, to pass judgment upon those that commit crime and raise the plea of insanity, it would surely prevent such unfortunate occurrences as legal executions, and imprisonment of the insane, who now frequently suffer these penalties. The words "lunatic," "insane," and "asylum" should be eliminated from our hospital nomenclature, and it would probably be better to call them simply "State hospitals," and to use some name, "Austin, Terrell, San Antonio," to designate their location. These are the only hospitals that the State owns and controls, and to eliminate the obnoxious words would relieve the feelings of the families and of many unfortunates themselves.

Eleemosynary Institutions. — Our eleemosynary institutions count the medical profession as their best friends. These institutions are the boasted pride of this State. Some members of our profession have been instrumental and indefatigable in securing their establishment, lending their influence in obtaining liberal appropriations, and assisting intelligently and ably in their management.

There is one institution that should be added to those which bespeak the intelligence of our people—one for the care of our indigent consumptives. Besides the humanitarian benefits that would accrue to numerous worthy but unfortunate individuals, who are now cared for in city hospitals, county poorhouses, and insane asylums, it would give a better chance of being restored to health than is possible under existing conditions, and be an important means of preventing the spread of the disease. Yellow

fever, which upsets commerce, causes stampedes and panics, has, during the past one hundred and two years of its history in this country, caused an average annual loss of life of about seven hundred and twenty, or say an utmost of one hundred thousand deaths, while from tuberculosis in the United States one hundred and fifty thousand die annually. Both are preventable diseases. Yellow fever, if there were such a thing as a humane disease, is one, death resulting from it in a few days and without much suffering, and rendering the ninety per cent who recover immunes, while tuberculosis is a dread disease, seeking those in the very flower of life for its victims, and prepares the soil for future deaths, a disease from which "day by day, and grain by grain, the mortal parts waste and wither away,—a disease in which life and death are so strangely blended that death takes the glow and hue of life, and life the gaunt and grizzly form of death."

The history of Texas is renowned, and the deeds of valor and patriotism of her noble sons stand unparalleled on the world's record. The achievements of the physicians of this State in securing medical legislation and the building of eleemosynary institutions, thus conserving the best interests of humanity, will add another chapter to her glory and shed luster upon the pages of her history.

Credit to Whom It Is Due.—The Association today has a membership of over 2415, with 115 subordinate county and district medical societies, representing organized counties. Last year we had a membership of 360.

This phenomenal increase of membership has been obtained by the earnest and energetic labors of the councilors, and others, who have interested themselves in the work of uniting the profession of this State. Only those who are acquainted with the facts can appreciate the time and attention that these gentlemen have given this matter. They are deserving the praise and thanks of this Association. May no efforts be spared in continuing the organization of the profession until every physician in this State becomes a member of the State Medical Association.

Now, gentlemen, my labors as your President are about ended, but my interest in the welfare of this Association will not cease. The Association has entered upon a new era in its history. Years count for little in the life of a nation or an organization. When the natural resources of this State are more fully developed, they are still in their infancy,—when industries spring up on every side, and the Panama canal brings our State two thousand miles nearer to the Far East than New York or California, when the Gulf of Mexico and the Pacific ocean are united, and this great expanse of water becomes dotted with vessels carrying our products to foreign lands and our own possessions, and return to us laden with rich cargoes, then our State will soon have more millions of inhabitants, and the membership of this Association will be vastly increased. If the present plan of organization is continued, this Association will prosper in influence and usefulness. The time may come when an attempt will be made to divide the organization and thus sever its integrity. The Association can never become too large and unwieldy, but ambitious aspirants may make this a plea if seeking to cause secession. Let me urge upon you the necessity of beginning to fortify the Association against this contingency, which, were it enacted, would be sure to cause sectional fights, hard feelings, and ruin our unity. The northern, southern, eastern, and western sections of the State should be equally considered. Those who are entrusted to manage the affairs of the Association should be chosen on account of their abilities and merit, and never by political intrigues or double dealings. We should look for safeguards which will maintain the permanency of the organization, by such means as selecting a permanent place of meeting, owning our own home, and establishing a pathological museum and library. Perhaps this is all premature, but when we number five or more thousand, instead of two thousand, members, conditions may warrant the consideration of these suggestions.

We should insist upon a higher standard of medical education, and that those entering medical colleges shall actually prove their

fitness by an examination, and not a mere form. Education, thorough education, is the proper way of elevating the profession.

Let us strive earnestly for the upbuilding and conservation of a worthy and united profession whose bond of union is not secured by mysterious influences, and manifested by passwords, signs, and hand grasps, but is cemented by humanity,—a tie that makes the world akin.

ANNUAL ORATION.

PHYSICIANS OF THE PAST AND SOMETHING OF WHAT THEY ACCOMPLISHED.

H. A. BARR, M. D., BEAUMONT.

Physicians and surgeons, of which we have a goodly number here today, have an extremely ancient ancestry. Their origin, somewhat obscure and altogether legendary, dates back to the early existence of the human race, coincident with the liability to sickness, injuries, and the processes of decay. In his primitive state, he recognized the relative virtues of different articles of food, and the uses of certain medicinal herbs and roots.

In the early days of the human race disease was usually ascribed to evil spirits or to the vengeance of some offended god, and the so-called physicians in those days who could convince their simple companions of their ability to banish evil spirits and appease the anger of some offended god were considered as divinely gifted, and reverenced as superhuman, and even temples were erected to their worship. The methodical study of medicine appears to have begun in the fabulous ages of Egypt. Far back in a period of mythology, Egypt possessed a store of medical knowledge, had able physicians and surgeons; many of them devoted to single specialties. The reports concerning physicians, and the practice of the healing art in Greece in ancient times, are merely legendary. Æsculapius, instructed by Chiron, the centaur, became so skilled that he incurred the displeasure of Pluto, and was stricken by a thunderbolt from Jove. Æsculapius became a god of medicine, and temples were erected bearing his name. These temples, the purposes and objects of which correspond to the hospitals of modern times, were erected in salubrious places, and their interiors were purified by burning fragrant incense and secret remedies. The sick were brought to these temples, where their infirmities received what was at that time considered appropriate treatment.

Hippocrates, born 460 B. C., is termed the "father of physic." He acquired anatomy by dissection of animals; was skilled in surgery, and some of his instructions as to treatment of disease being strikingly similar to those of the present day. Thus he relied much upon the power of nature, which he termed the "first of physicians," stimulating when nature failed, moderating when her forces were excited.

It was not, however, until the beginning of the fifteenth century that medicine and surgery began to advance by successive discoveries in anatomy, physiology, and pathology, to such an extent as to entitle it to claim the dignity and standard of a science. From the beginning of the fifteenth to the close of the seventeenth century, the medical profession contained among its members such men of great learning and ability as Eustachius, Fallopius, Sylvius, Pacchioni, Malpighi, Meckel, and Scarpa; names which became intensely familiar to the mind of every physician here during his or her career as medical students. These names then, as a rule, were not associated with dead celebrities, but with structures, often apparently remote and complicated, of the human economy.

It is probable that the antiquity of surgery must take precedence of medicine, since attempts to assuage the pain or remove the inconveniences of wounds or injuries resulting from external causes would likely be made before internal diseases were in any degree understood or supposed to be within the control of human means. While the internal diseases of mankind were still ascribed to the anger of the gods, and the smoke of expiatory sacrifices ascended from altars, surgeons had already become renowned by bold and salutary operations. Students of Sanscrit literature, and those who have sought to decipher the inscriptions of Egyptian ruins, find some grounds for the belief that surgery was more advanced among the ancient peoples than was commonly supposed; pictures having been found displaying surgical instruments and operations not unlike those of modern times. It is certain, at least, that the

custom of embalming the dead, which implies some anatomical and surgical knowledge, was prevalent in very early times.

The first definite editions regarding surgery comes to us from the Greeks. These, however, were the pupils of the Asiatics and Egyptians. Chiron, the centaur, is more generally accredited the "father of surgery" in the fabulous ages of Grecian history. His reputation was eclipsed by Æsculapius, a son of Apollo, by some reckoned the pupil of Chiron, by others, his contemporary and superior. Though, by some, his very existence is questioned.

It was not, however, until Pythagoras brought the light of philosophy to bear upon the practice of the healing art that the way was paved toward raising its dignity in the direction of positive knowledge. This was some 700 years before the beginning of the Christian era. A century later there appeared that splendid genius, Hippocrates, who did so much to free the healing art from the absurdities with which superstition and ignorance surrounded it. His attention appears to have been more toward medicine than surgery, yet, in the latter branch, his practice was bold and decisive. He commended and did some operations that have only of late years been acknowledged as legitimate surgical procedures; such as tapping the chest for empyemia, nephrotomy, trephining the skull for persistent headache. As, in this day, some surgeons are alleged to be guilty of doing some operations more often than is absolutely necessary, so was Hippocrates accused of being fond in his day of manipulating the trephine. The next surgeon of note, of whom the old writers speak, was Aulus Cornelius Celsus, who is thought to have been the first to point out ruptures of the intracranial blood vessels, unattended by fracture. During the latter part of the first century, the trephine began to be used in the treatment of epilepsy. Celsus was the greatest of the surgeons of ancient Rome, and his observations on injuries of the head are all fully in accord with our present knowledge of this subject, at least in the principles laid down.

Those who study the mournfully sublime struggle through which human progress has been achieved learn that every forward foot-

print has been blood-stained. It is, we hope, with a pardonable and becoming modesty that we medical men of the present, in the United States, point to a comparison of the great progress made in medical science in our own country with that of all other parts of the civilized world. It was scarcely to be expected that our contributions to science would keep pace with those of the Old World, where accumulated wealth, settled conditions, and well-equipped institutions of learning naturally tempted the studious and contemplative mind to problems of science and research, yet how many of the great discoveries and inventions of the century have come from or originated in our own country? The record is one of which we may well be proud. The discovery of anesthesia, the demonstration by Holmes as to the contagiousness of puerperal infection, the studies by the students of Louis on typhoid fever, the accomplishments of Bigelow and Simms and McDowell, and, lastly, the noble work of Reed, Lazear, Carroll, and Agramonte in Cuba, by the investigations of the mosquito in its relations to the transmission and spread of malaria. And during that period, what a change has come over the condition of medical education in this country. The city of Dallas, Texas, at the present time has more medical colleges than had the whole of the United States a century ago. There has been a time in this country when one year's attendance, "the year" being only three or four months duration, at taking lectures entitled one to a diploma, or, in other words, made of him a legal physician. Ten years ago, the requirements of admission to many medical schools consisted in the ability of the applicant to produce the requisite fee. It was not uncommon to hear that this or that good fellow, whom one might have known the day before as the driver of a horse car, had taken his degree in medicine. On investigation, it would probably be found that for the past two or three years he had been attending evening classes, and, at the end of this period, had stepped from the platform of his car to the bedside of his patient in possession of a diploma attesting him a legal practitioner of medicine.

William Sidney Thayer, in his eloquent address at the recent

meeting of the American Medical Association in New Orleans, said, concerning medical schools of the present day: "In the last few years, however, great changes have come into our methods of teaching. Four years' actual work in a medical institution are everywhere required. In our better schools, physiology, pathology, anatomy, and pharmacology are no longer taught as they used to be by lectures to an untrained body of men. In many instances a student begins his medical studies with a training which has already taught him to think and investigate for himself; and our duty as teachers is coming to be rather that of guides and leaders than of simple lecturers. The teacher of today must be a student and investigator in his own line, for the time is fast approaching, if not already here, when the professor of anatomy or physiology can not be a practitioner of medicine. His whole time must now be given to his studies and his teaching, his immediate duties being not so much to lay facts before his students as to show the students how to find them out for themselves. And so it is in all these branches, the student in the laboratory sees, acts, controls and verifies, while of old he was expected and required to believe what was said to him; he is today taught rather to doubt that for which he can not obtain proof. The path of those workers and investigators who have made valuable discoveries in medical science has not by any means always been strewn with roses. It seems well nigh incredible that the entire public can not be brought to accept self-evident truths which are so often forcibly demonstrated apparently to the satisfaction of any reasonable and intelligent being; yet, such is, we regret to say, too often the case; a most striking example of such is that, notwithstanding the fact that the discovery of vaccination, and its application to the prevention of smallpox, has rendered the civilized world immune to its greatest plague, yet there are still at the present time many anti-vaccination societies. Concerning other discoveries in medical science, second only in importance and value to the public at large to that of vaccination, often unrelenting and fierce opposition has been experienced.

W. W. Grant, President of the Colorado State Medical Society, in a recent address before that body, in speaking of the progress of American medicine, and its relation to public affairs, says: "As a result (of such progress), two striking facts are manifest in the short space of one year: one in Cuba, the gem of the West Indies, the other in Sierro Leone, of West Africa. Under English domination, and known until these discoveries as the 'white man's grave,' now, with the simple application of drainage and petroleum to the stagnant, filth-breeding waters, the home of the plasmodia and mosquito, the two chief cities, Havana and Free Town, have been converted from pest-houses to pleasure resorts. One before was a menace to English civilization, the other to the health and commercial interests of an important part of our own country; now, under American medical investigation, and the work of the Marine Hospital Service, both are safely open to the industrial genius and commerce of the civilized world."

The true physician, with a commendable zeal and ardor, cultivates the noble art of doing good to his fellow-creatures. In this pursuit alone of all others he is most diligent, and, accordingly, it would be difficult to find an example of any other to whom so many individuals are indebted for happiness or comfort, or to whom the public at large owe more essential obligations. Infanticide was a dark stain on Pagan civilization. It was almost universally practiced in Greece, such eminent men of their time as Plato, Aristotle, Lycurgus, and others approved this inhuman practice. Consequently, there was little or no legal check to the practice. In China today, where the medical profession, except possibly in a few circumscribed localities, can not bring to bear any appreciable influence, this murderous practice is carried on to an alarming extent; in fact, it is said to be as common in China today as it was among the Pagan civilization of Greece and Rome.

The medical profession has always strenuously protested against, and vigorously condemned, this murder of unborn innocents. Were I not restrained by the fear of offending modesty, and of

imparting knowledge where "Ignorance is bliss," I would dwell more at length on the social plague of antenatal infanticide, which, despite the utmost endeavors of a medical profession to check and prevent, is even now, among certain strata of society, insidiously and systematically increasing, in defiance of all civil penalties and of the divine law, which says, "Thou shalt not kill." If there is any problem of the age that demands sober, earnest, and prayerful thought, coupled with concert of action on the part of all who will or can do anything, it is this one.

At irregular and sometimes short intervals, some individual or individuals who suffer from perversion, at least along certain lines, imagine themselves protectors of the welfare of the human race, and in their own diseased minds, concerning conditions not always recognized by the general public, they imagine themselves philanthropists, and forthwith advocate propositions for the public welfare which are untenable, unreasonable, and sometimes actually brutal and inhuman. A most striking illustration and example of such characters is illustrated in the person of a certain New York clergyman who recently, in an address before a body of medical men, advocated a proposition to shorten the period of suffering of helpless invalids, by gently putting them out of the way. Should such a practice become common, the possibilities of using this plea by unscrupulous persons would soon become appalling. Few true medical men, indeed, there be who would sanction such a custom; on the contrary, they will and do, practically as one man, condemn it so vigorously that its adoption, even to a limited extent, is well nigh, if not entirely, impossible, or, at least, impracticable.

Last, but not least, the physicians of the present day condemn and protest against the horrid descriptions and unblushing confessions of piles, itch and other dreadful diseases, which many of the sufferers, either of their own free will, or, as is often the case, at the solicitation of quack advertisers, love to parade before the public through the medium of newspapers and magazines. One able writer of years ago wrote condemning this pernicious prac-

tice as follows: "Who wants to know that ladies have wombs or abdomens but us doctors? When I was young, a woman had no legs, but only feet and, possibly, ankles; now they have utero, abdominal supporters, not in fact only, but in the newspapers." These are surely not fit subjects for newspaper advertisements, hence the efforts on the part of the medical profession to suppress the publication of such matter. That their efforts in this direction have not been in vain is shown by the fact that some States have already passed stringent laws regulating the printing and distribution of immodest and repulsive medical advertisements.

SECTION ON GENERAL MEDICINE.

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   Albert Woldert, M. D., Tyler.
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MALARIAL FEVER—ITS EXPENSE TO THE PEOPLE OF TEXAS.

ALBERT WOLDERT, M. D., TYLER.

The True Cause of Malarial Fever.—No scientist familar with the microscope can at the present day doubt that the accidental discovery of the malarial parasites in the red-blood corpuscles of man by Laveran in 1880 is the true cause of malarial fever.

The quickest and the best way to determine whether or not a patient has malarial fever is to procure a drop of blood and examine it under the microscope with a 1-12 oil-immersion lens. If the malarial parasite be found, there can be no question as to the diagnosis. The quinin or "therapeutic test" is uncertain, and requires two or three days to settle the question of diagnosis, while the microscope can determine this question within five minutes.

According to the belief of the Italians, with Golgi at the head, there are three different types of human malarial parasites which produce the different types of chills and fevers, namely, the tertian, the quartan, and the estivo-autumnal. Most Americans have adopted this classification. Thayer and Hewetson, of Baltimore, deserve great credit for their original work on this subject, and entitled "The Malarial Fevers of Baltimore,"[1] and though now it is nearly ten years old, their book is one of the very best which has ever been written on malarial fever.

How the Malarial Parasite is Conveyed From Man to Man, and How it is Perpetuated.—This germ of malarial fever is an animal organism, and in this respect is different from the tubercle bacillus, the cholera bacillus, and other bacteria which may be called vegetable organisms. In fact, the malarial parasite has been classified[2] into a natural order (gymnosporidia), a class (sporozoa) into different genera (a—Hemameba, and b—Laverania), and into different species; hemameba malarie (quartan), hemameba vivax

(tertian), and hemomenas precox (remittent fever—Ross), and it has been further proved that some of the malarial parasites are of different sexes. These malarial parasites (protozoa, hematozoa, gymnosporidia, gametocytes, sporozoa, hemameba), found in the red-blood corpuscles of man during the existence of malarial fever, are not normal constituents of the blood. They are harmful parasites in the truest sense of that word.

The malarial parasite (in the form of round bodies) probably spends its winters in the blood of those cases of malarial fever who have never been cured, and in infected mosquitoes (in the form of spores). I have found the malarial parasite in the blood of man during the month of February and after freezing weather (American Journal Medical Sciences, March, 1903). It can be said that this malarial parasite does not complete its entire life-cycle in the blood of man, but only a part of this cycle, and if it had no other host in which to grow and develop than in the blood, it would doubtless perish, and there would never more be any malarial fever. Unfortunately, however, the malarial parasite has selected another host to complete its existence, and this is the mosquito of the genus Anopheles. This question has been settled positively within recent years, though some relationship had been suspected to exist between them from antiquity. Thus Nuttall[3] states that almost 2000 years ago Roman writers, among whom were Varro, Vitruvius and Columella, suggested that some relationship might exist between mosquitoes and certain diseases. Sydenham,[4] nearly 300 years ago, wrote: "That when insects do swarm extraordinarily, and when fevers and agues (especially quartan) appear early, as about midsummer, then autumn commonly proves very sickly."

However, none hit upon the true method of the dissemination of the disease until Dr. Patrick Manson,[5] in 1894, fully explained to Dr. Ronald Ross the complete details of his theory. So firmly convinced did Ross become that he agreed to make a practical test of this question. Manson prevailed upon the British government to despatch Ross to India, where his work was carried on. We

next find Ross, in April, 1895, at Secunderabad, India, busily engaged in this work."[6] Arriving, however, too late in the season to study human malaria, he began to study the malarial parasite of birds,—or protosoma—Labbé. As in all original work, we find that the path of Ross was not strewn with roses. He made a note as follows:[7] "As a matter of fact, for nearly two years and a half my results were almost entirely negative." He could not obtain the correct scientific names of the mosquitoes, and, consequently, used names of his own. Mosquitoes of the genus Culex he called "grey" and "brindled," and those of the genus Anopheles he called "dappled winged."

Cultivation of Malarial Parasite of Birds in the Mosquito (Culex).—On March 11 and 12, 1898, Ross placed[8] within a cage (covered over by mosquito bar) certain birds whose blood contained malarial parasites. Inside this cage he liberated a number of mosquitoes, which bit the birds, and on March 13th he began to dissect these mosquitoes. Out of a number of those dissected he only found one which had become infected with the malarial parasite of birds. Through the courtesy of a loan made me by Dr. Ronald Ross, now of the Liverpool School of Tropical Medicine, I am able to present one of his first and very best specimens, which shows the zygotes of bird malaria that had developed within the middle intestine of the mosquito. (See Figs. 1, 2 and 3.) Note. The zygote is a further developmental stage of the malarial parasite. Spores develop within the zygote after several subsequent days' growth. It was dated Calcutta, India, July 12, 1898. I had the pleasure of presenting the specimen before the Philadelphia Pathological Society, November 8, 1900.

Description of Middle Intestine (Stomach) of Mosquito, Showing Zygotes of Bird Malaria Obtained by Ross.—Description of Plate No. 1.[9]—This specimen shows the entire middle intestine after dissection, with part of the esophagus above, and the attached malpighian tubes, and hind intestine below. Upon examination with (a low power) No. 3 ocular and No. 3 objective (Leitz), with diaphragm well open, at first sight one might be disposed not to

Middle Intestine of Mosquito Showing Zygotes of Bird Malaria Obtained by Ross.

Zygotes of bird malaria (Protosoma Labbé) seen in the same specimen of dissected middle intestine of mosquito (Culex).

Plate No. 1.

Middle intestine (stomach) of mosquito showing zygotes of protosoma 10*M* in diameter, and about two days old. No. 3 oc., No. 3 lens (Leitz).

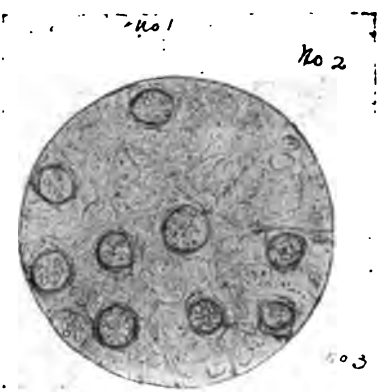


Plate No. 2.

Same as plate No. 1, showing ten zygotes of protosoma about 10*M* in size in one field, $\frac{1}{12}$ oil immersion lens No. 3 oc. (Leitz). From a region near posterior end of middle intestine.

Plate No. 3.

Same as plate No. 2, zygotes of protosoma Nos. 1, 2 and 3 (same as plate No. 2) greatly magnified, and diagrammatic, showing yellowish hyalin capsule and yellowish hyalin oval shaped masses (fatty granules ?) and vacuoles. Protoplasm has a reticulated appearance and contains reddish pigment granules.

detect anything abnormal, the specimen appearing to be brownish and uniformly granular. If a portion of the light be now cut off, one can see dozens of small round and dark granular-looking cells scattered uniformly over the entire specimen. These cells have a uniform appearance, and may be picked out quite readily, even with a low-power lens. The lower portion of this middle intestine contains the most zygotes, or coccidia, as they are also called. These zygotes are innumerable, but I succeeded in counting over 150 of them. I have dissected dozens of specimens, and there can be no mistake about these cells being abnormal products. There might be some doubt about the identity of these cells were there only one or two of them, but, in this specimen, there are possibly hundreds. The minute structure of these zygotes (coccidia, oöcysts, or sporozoons) must be studied with a 1-12 oil-immersion lens.

Description of Plate No. 2 (1-12 oil-immersion lens, No. 3 ocular—Leitz): That which strikes the eye at once is the appearance of certain round, very prominent, yellowish or hyaline glistening, granular cells containing a few minute granules of reddish pigment. All of these cells have a distinct capsule. At this stage (which are several days old) the cells range from probably fifteen to thirty microns in size. This is one of the peculiarities of the zygotes, that they do not develop with the same degree of rapidity, and hence they are of different sizes. These cells or zygotes lie between the muscular fibers, which they displace to either side (see figure 2). As a rule, they seem to lie immediately upon the deep epithelial cells of the middle intestine. Sometimes they may protrude from the outside of the intestine, looking like excrescences.

A marked feature of these cells is that they are easy to find, and not pale or indistinct, as are the other structures in which they lie encapsulated. In many respects they resemble the appearance of the original malarial parasites, from which they were derived. Ordinarily, there are from two to seven or eight of these zygotes in each microscopic field, but this specimen contains an unusual number of them.

Examining these oöcysts more closely (Plate No. 3), one observes that the cells have a more or less roundish or ovoid shape, with a thick yellowish glistening or hyaline capsule, in which lie scattered a few particles of garnet or reddish pigment granules, as well as a few glistening, oval-shaped scattered masses of fat (?). The protoplasm has the faintest pinkish tint and has a reticulated appearance, and, in some areas, has a few slit-like vacuoles.

The occurrence of from four to six or seven dark-reddish pigment granules (destroyed hemoglobin), within the zygote, is one of its main characteristics, and serves in identifying them as being derivatives of the malarial parasites from the blood.

Cultivation of the Malarial Parasite of Man in the Mosquito (Anopheles).—But, seven months before Ross had succeeded in cultivating the malarial parasite of birds in the mosquito, he had also obtained several successful results in the case of the human malarial parasite, though he at the time did not publish his results.

Of this discovery, it might be well to quote his words:[10] "Eight mosquitoes (with spotted wings) were fed on a patient whose blood contained crescentic gametocytes. Unfortunately, I dissected six of them either prematurely or otherwise unsatisfactorily. The seventh was examined on August 20, 1897, cell by cell; the tissues of the stomach (which was now empty, owing to the meal of malarial blood, taken by the insect four days previously, being digested) were reserved to the last. On turning to this organ, I was struck by observing, scattered on its outer surface, certain oval or round cells about two or three times the diameter of a red-blood corpuscle, cells which I had never before seen in any of the hundreds of mosquitoes examined by me. My surprise was complete when I next detected within each of these cells a few granules of coal black melanin of malarial fever—a substance quite unlike anything usually found in mosquitoes. Next day the last of the remaining spotted-winged mosquitoes was dissected. It contained precisely similar cells, each of which possessed the same melanin; only the cells in the second mosquito *were somewhat larger than the first.*"

Two of these specimens of human malarial parasites (zygotes), which had undergone development in the middle intestine of the mosquito, were sent by Ross from India to Dr. Patrick Manson, of London, and these were also examined afterwards by Drs. Smyth, Thin, and Bland-Sutton. *Thus Ronald Ross, on August 20, 1897, solved the life history, or complete biologic cycle of the human malarial parasite, and with it the true nature of the disease.* Ross published the results of his observation and discovery in the British Medical Journal, December 18, 1897. It is necessary to remember the date of this discovery, since certain of the Italians also claim the credit for having first solved this question. The Italians were probably the first to prove that an infected mosquito might bite a healthy man and thus give him the disease, but, doubtless, they would never have tried such an experiment had the facts proved by Ross not been known.

The first real experiment, to prove that a mosquito infected with the human malarial parasite might inoculate the disease into a healthy man, was made by Dr. Amico Bignami of the Institute of Pathological Anatomy of Rome, under the direction and supervision of Dr. Battista Grassi. This experiment was begun on September 26, 1898, but did not end successfully until the morning of November 1, 1898, when the man bitten by infected mosquitoes had a chill, followed by fever, and, on the morning of November 3, ameboid parasites were found in the blood. Delay in obtaining the successful result was probably occasioned by the fact that the mosquitoes used were doubtless uninfected, little being known at that time about the life history of the human malarial parasite.

Soon after Ross began his work in India, Marchiafava and Bignami undertook similar work in Italy. Koch soon followed, and all of these investigators working independently, confirmed the original work of Ross. Still later, and in the summer of 1900, Dr. W. S. Thayer, of Baltimore, obtained some positive results, and within a few months afterwards (Monday, November 5, 1900) the writer also confirmed this work of Ross in his efforts to cultivate the human malarial parasite in the mosquito—Anopheles, and

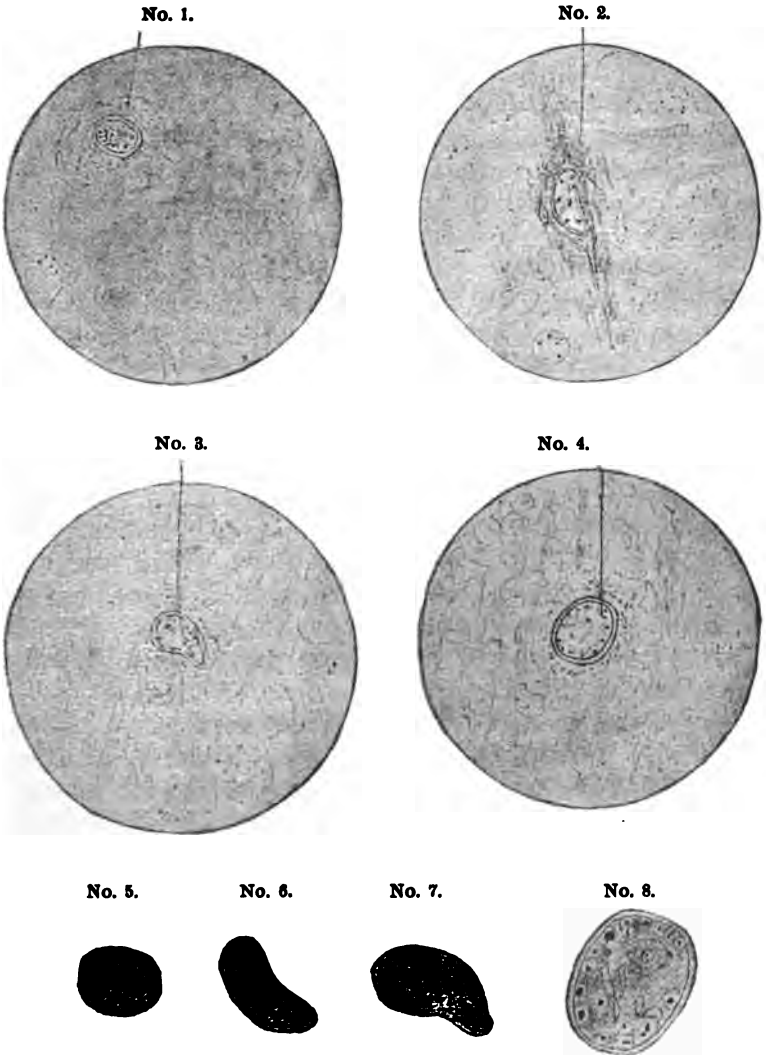
my results gave the second successful result in America, Thayer's being the first.

In regard to my own investigations[11] on this subject, I might say that it was done while living in Philadelphia, Pa., and that it required fourteen months (and throughout the hottest summer, for thirty years) of almost incessant microscopic work to confirm these observations presented before you. I must acknowledge my great indebtedness to Ross, who encouraged me very greatly through the loan of his specimen, his numerous pamphlets, and his many personal letters, and also to Dr. Simon Flexner, formerly of the University of Pennsylvania, in whose private laboratory some of my work was done. In an adjoining room, the specimen which I obtained will be shown you under the microscope. Through the invitation of its president, Dr. W. W. Keen, I had the honor of presenting these specimens of the estivo-autumnal malarial parasite (or zygote), which had undergone development in the Anopheles, before the College of Physicians of Philadelphia, December 5, 1900.

Description of Plate.[12]—Four zygotes (unstained) of estivo-autumnal malarial parasites from a man, showing different stages of development, and found in lower portion of middle intestine (stomach) of Anopheles quadrimaculata (or claviger), dissected and drawn by author. The mosquito bit on Thursday, November 1, 1900, between 8 and 9 p. m., and was dissected on Monday, November 5, 1900, at 4 p. m. Examined with No. 3 ocular, No. 1-12 oil-immersion lens (Leitz).

Specimen No. 1.—Shows an ovoid-shaped zygote in an early stage of development and containing numerous reddish pigment granules and vacuoles. It is about fourteen to sixteen microns in diameter.

Specimen No. 2.—Crescent-shaped zygote containing reddish pigment granules and growing between the muscle fibers, which it pushes to either side. The pigment granules are of larger size than in No. 1, and are pressed toward the periphery. It is about fourteen to sixteen microns in length.



Four zygotes of human malaria (estivo autumnal) seen in the same specimen of dissected middle intestine of mosquito (Anopheles.)

Specimen No. 3.—More or less vesicular-shaped coccidium, containing slit-like vacuoles. The body of the coccidium has a faint yellowish tint. It is about ten microns in diameter and fourteen to seventeen microns in length.

Specimen No. 4.—More or less ovoid-shaped zygote, containing numerous reddish pigment granules of destroyed hemoglobin, which are arranged around the periphery. Numerous slit-like vacuoles are also shown. It is about twelve to fourteen microns in diameter and sixteen to twenty microns in length.

A More Minute Description of Plate.—Macroscopic Appearance.—Nothing can be determined by a macroscopic examination of the infected middle intestine of the mosquito. It still possesses a light brownish tint.

Examination With Low-Power Lens No. 3 ocular, No. 3 objective (Leitz).—With this power the zygotes can not be seen at all. With No. 3 ocular and No. 7 objective, bodies 1, 2, 3 and 4 can be seen quite clearly, the pigment dots having a brilliant reddish tint. The rest of the body of the cell has a bright hyaline tint, and in areas adjacent to the pigment appears granular. The general outline and finer characteristics can not be determined with this power. Examination with No. 3 objective, No. 1-12 oil-immersion lens (Leitz).

Appearance of Zygote No. 1.—This coccidium, as has been stated, has many characteristics of the ovoid body of the fresh blood found in cases of estivo-autumnal fever, with the exception that in the zygote the pigment granules are slightly larger, and are pushed outward from the center and toward the periphery of the cell, each granule being surrounded by a faint halo, which are probably vacuoles. This pigmented cell is surrounded by a very thin hyaline capsule, causing it to stand out quite prominently from the surrounding tissues.

Appearance of Zygote No. 2.—While coccidium No. 1 is situated outward and superficial to the deeper epithelial cells, this specimen seems to have selected a position among the muscular tissues which it pushes to either side. In shape it corresponds to

the crescent of the estivo-autumnal parasite seen in the fresh blood, thus seeming to demonstrate the power of the zygote to preserve its original type. The pigment granules are considerably larger and fewer in number than in the crescent from the fresh blood, and are arranged around the periphery. A faint, colorless area surrounds each pigment granule, and very faint slit-like vacuoles are seen in several areas, but any attempt to draw them only exaggerates their real appearance. The zygote is surrounded by a thin hyaline capsule, which gives it a stamped-out appearance.

Description of Zygote No. 3.—This zygote is the lowermost one and is not far above the origin of the malpighian tubes. It is irregularly crescentic in shape, elongated at one extremity, and is situated somewhat superficial to the softer epithelial cells and adjacent to a spiracle, as is zygote No. 1. Here, too, the brilliant reddish pigment granules have coalesced and have been pressed outward toward the periphery. Faint vacuoles surround each pigment granule, and slit-like clear spaces traverse the body of the cell in several localities. Its outline is quite sharp, and, focusing up and down, the appearances change somewhat, the reddish pigment becoming slightly yellow, while the vacuoles assume a different shape.

Description of Zygote No. 4—(Exhibited under the microscope).—This coccidium is somewhat ovoid in shape, and is the largest one of all. It may be easily studied in detail with a No. 7 lens. It, too, is located near but superficial to the deeper epithelial cells. Many irregularly shaped reddish pigment granules are arranged around the periphery of this cell, and are several times the size of the pigment found in the malarial parasite of the fresh blood.

Certain portions of the inner lining of the coccidium seem to be slightly thickened, leaving a more or less lighter area in the center, the upper portion of which contains single pigment granules.

Slit-like vacuoles extend in various directions within the body of this cell, which are brought out better by focusing up and down. Its general color is hyaline. This zygote is surrounded by a colorless rim or capsule, thus giving it a stamped-out appearance.

Figures No. 5, 6, 7, and 8 show the same, but greatly enlarged and diagrammatic.

The Anatomy of the Mosquito.—At the time I made my first effort to cultivate the germ of malarial fever (December, 1899), very little was known in regard to the anatomy of the mosquito. So far as I then knew, there were no guides on this subject, and I had to devise my own methods and plans of going about this work of determining the anatomy of this insect (Journal American Medical Association, February 10, 1900).

Through the courtesy of Prof. E. G. Conklin of the Biological Department of the University of Pennsylvania, I began first to dissect fresh mosquitoes under the microscope, and to study the specimens cell by cell. After having dissected from twelve to twenty of these insects, and finding the parts similar, I then outlined, as best I could, the anatomical relation of the parts dissected. Afterwards I was successful in imbedding the whole mosquito in paraffin, and, by means of the Minot microtome, proceeded to make serial sections, after which each part was carefully stained with Delafield's hematoxylin solution. By sliding these serial sections along under the microscope, and comparing these with dissections of the fresh mosquitoes, I was then able to determine the entire anatomy of this insect, which I believe was the first time this complete work had ever been done in America.

Photographic plates of these specimens are presented before you.[13] The length of time a mosquito may live is not definitely known. I have kept them alive in glass jars from October 28th to December 26th, or sixty days.[14] Mosquitoes probably survive throughout the entire winter.

The Development of the Malarial Parasite Within the Mosquito.—How This Insect Protects the Parasite.—It is very necessary to remember that there are several hundred different kinds of mosquitoes, and far more important still is it necessary to remember that up to this time only one genus of mosquito has ever been found capable of acting as the definitive host (man acting as the intermediate host) for the malarial parasite. This selection by

the malarial parasite of man and the Anopheles to complete its life-cycle may be the result of a natural selection. The only genus which has ever been proved to harbor the malarial parasite is the genus Anopheles. Of this genus about forty different species have been found. Not all Anopheles, which suck malarial blood into its middle intestine (stomach), carry the disease with them, because, after the malarial parasite leaves the human body, it leads a precarious existence, and if the mosquito flies into a very cold atmosphere the parasite may not develop, and no spores are formed, hence no malarial fever. Many fine points have not been worked up, and this offers a broad field for original investigations here in Texas. But I wish to give warning in the very beginning that the prerequisites should be a quick eye, robust health, considerable money, and unbounded patience.

The species of the genus Anopheles, which were generally used abroad and by myself, were the Anopheles quadrimaculata (or claviger) and the Anopheles punctipennis. I have found the quadrimaculata to be very common around Philadelphia, and in Texas. Near Beaumont and in Tyler I have found[15] three different kinds of malarial-carrying mosquitoes, but these may doubtless be found all over Texas, if looked for.

Wherever one finds a case of malarial fever in a new community, and especially during the fall months (when the mosquito prefers warmth), if they will look carefully in the dark corners, and on dark-colored clothing hanging around the sleeping rooms, they will usually find the malarial-carrying mosquitoes. In Philadelphia I once made a trip of ten miles and found the malarial-carrying mosquito by this method. I learned that numerous people in that locality had suffered from fever, and chills.

The vicious circle begins when the Anopheles bites a patient suffering from malarial fever, and swallows into its body the blood containing these parasites. *This, therefore, answers the question as to where the mosquito gets the malarial parasite. It procures it from the blood of the man who has malarial fever.* The parasite which was round in shape while living inside the red-blood

corpuscle of man, after having been swallowed by the mosquito soon escapes from the red-blood disc, and begins to swell up at certain points around the periphery. This phenomena is very soon (probably within fifteen to thirty minutes) followed by the protrusion of little arms or flagellæ, which soon begin to lash themselves around in all directions quite rapidly, and it is a beautiful as well as an astonishing picture to see these flagellated malarial parasites being pulled around from place to place by these flagellæ.

It should be remembered that not all of the malarial parasites develop flagellæ, and this again accounts for the fact that not all Anopheles become infected on biting a case of malarial fever.

In the case of the estivo-autumnal fever, those ovoid-shaped parasites which do develop flagellæ are mature sexual forms, and are zoologically termed *gametes*. The female sexual form, or ovoid parasite, is termed the *macrogamete*, and the cell which produces the male element is termed the *macrogametocyte*.[16]

After the development of these flagellæ, some of these little arms or flagellæ tear themselves loose (that is, the male elements or microgametes), and, entering certain ovoid malarial parasites, impregnate them. Immediately after impregnation occurs the ovoid body, which did not before develop flagellæ, now develops them quickly, and has acquired the power of moving about quite rapidly. By means of these flagellæ the impregnated parasite has the power of penetrating between the epithelial cells of the middle intestine (stomach) of the Anopheles. The flagellated parasite now buries itself deeply in the muscular layer of the stomach of the mosquito, where, within a day or two, it becomes converted into a cystic growth called the *zygote*. By some writers the zygote is called *ööcyst*, or *sporozoon*. Within a few days this zygote will have grown to several times the diameter of the original malarial parasite, and about the seventh to the tenth day it will be found that this zygote has become filled with small, more or less, elongated spindle-shaped bodies, tapering at the extremities, and these little bodies are called *sporozoites*, or spores of the malarial parasite. If injected into the blood of man, these sporozoites (blasts), or

spores of malarial fever, enter the red-blood corpuscles, become again round in shape, destroy the red-blood corpuscles and produce malarial fever, or chills and fever. Whether these spores of malarial fever can be dried up, blown through the air, and thus gain entrance into the blood of man through the lungs, or whether they can be swallowed in the drinking water and thus enter the blood and give rise to chills, has never been proven. *All such efforts seem to have failed, and it thus appears that the only way man can contract malarial fever is through inoculation with these spores.* The spores of all the different types of malarial fever have been cultivated in the mosquito (Anopheles). If these spores be inoculated into man, the period of incubation, before development of the chill or fever, is as follows: For tertian, two to five days; for estivo-autumnal, two to fourteen days; for quartan, eleven to twenty-one days (Marchiafava and Bignami). To learn all of these facts connected with the life history of the malarial parasite has cost the British government, the German government, and the Italian government (and their people) in the neighborhood of $300,000. Ross has made one trip to India and four trips to Africa to carry on the work, Koch has spent many months in Africa and in the German possessions, while Marchiafava, Bignami and Grassi have devoted years to the work in Italy. The work of these investigators, as stated above, has been confirmed in America. From a practical point of view, the work has proved valuable, since lands in malarial districts which could not be tilled, and where it was once dangerous for the white man to sleep, have become healthful, productive, and profitable to the nations which have carried on these investigations.

The Prevalence of Malarial Fever in Texas.—The question of malarial fever in Texas and its riddance is a very serious one. In India it has been a serious one for many years, and we may easily account for this when it is stated that in India 5,000,000 people die every year from the different forms of "fevers." It is not quite so bad in Texas, but it is bad enough.

For over a year I have been collecting and have brought before

you today statistics from nearly all portions of this State relative to this question of malarial fever. I have found the following condition of things. In this connection, I wish to congratulate the city of San Antonio for being ahead of every other city in this State in preserving and publishing in pamphlet form its complete health records. I see by the daily papers, recently published, that Houston will also fall into line on this question of preserving health records. If there be other cities which do this, such records have not been furnished to me.

Report of City Hospital Made by Board of Health of San Antonio.—During the year ending May 31, 1898, there were in the city hospital of San Antonio twenty-seven deaths from malarial fever; outside of the hospital during the same year there were twenty-six deaths, or, in all, forty-three deaths. In 1899 there were eighteen deaths from malarial fever in the hospital. In 1901 there were in that city sixty-two deaths from malarial fever, and in 1902 fifty-two deaths. During the year 1902 there were no cases of *yellow fever* in that city.

During the month of September, 1903, there were in San Antonio ten deaths from malarial fever, in October sixteen deaths, and in November thirteen deaths, or, in all, thirty-nine deaths during these three months of 1903 (population, 63,000).

What a great panic the people of that city had to undergo when it was announced that yellow fever existed there. The newspapers were filled with quarantine news, and people crowded the cars to get away from the pestilence. Yet, during these three months of September, October, and November, 1903, there were only thirteen deaths from yellow fever.

In other words, there were just three times as many deaths from malarial fever as there were from yellow fever, and nothing was said of the matter. The silence has been that of the tomb. And yet malarial fever is almost as "catching" a disease as yellow fever, and is transmitted from the sick to the well in the same way, namely, through the mosquito. But, in the case of yellow fever, by a different genus—*Stegomyia fasciata.*

Statistics Regarding Malarial Fever in Texas United States Army Posts.—At Fort Bliss, in El Paso county, the average main strength of the fort for twelve years was 1928, and during this time there were 236 cases of malarial fever, or, in other words, one soldier in eight had chills and fever.

At Fort Brown (Brownsville) the average main strength of the post for twelve years was 1394, and the number of cases of malarial fever was 849; or, in other words, more than one-half of the soldiers had malarial fever.

At Fort Clark, at Brackettville, one to every seven soldiers had chills and fever. At Fort Eagle Pass (in Eagle Pass) the proportion who suffered was one to every six; at Fort McIntosh, at Laredo, one to every thirteen; at Fort Ringgold, at Rio Grande City, one to every eight, and at Fort Sam Houston, in San Antonio, the proportion was one case of malarial fever to every eight soldiers.

A summary of all these cases from the different army posts showed that one soldier in every seven fell ill of malarial fever. To the credit of the United States government, it should be stated that at this time (1904) measures are being taken all along the western border of Texas looking to the destruction of mosquitoes, so that yellow fever will not get a foothold in this State, and such action should also have a beneficial effect in diminishing the number of cases of malarial fever.

Statistics Regarding Malarial Fever in Texas Railway Hospitals.—In order to further determine the prevalence of chills and fever in Texas, I have, through the courtesy of several of the chief surgeons of the railroads, been furnished with accurate records kept by these hospitals. These hospitals all treat cases coming to them for hundreds of miles, and from different directions, and in that way they collectively furnish an index of the whole State.

Statistics from the Hospital of the International & Great Northern Railroad, at Palestine, Texas.—This railway extends from Mineola to Galveston, and from Longview to Laredo, a distance of 400 miles:

	Total number patients treated in hospital.	Number cases malarial fever.
Year ending June 30, 1896.....	452	100 (no deaths).
Year ending June 30, 1897.....	682	175 (no deaths).
Year ending June 30, 1898.....	827	361 (no deaths).
Year ending June 30, 1899.....	851	250 (no deaths).
Year ending June 30, 1900..... ...	1073	733 (one death).
Year ending June 30, 1901.....	1138	340 (no deaths).
	5023	1959

In other words, during the six years, from 1896 to 1901, inclusive, there were treated at the general hospital of the International & Great Northern Railway 5023 patients, of whom 1959 had malarial fever, or 39 per cent of the patients.

The total number of employes of this railway during the year 1901 was 2585,[17] and the total number of patients who had chills and fever brought to the hospital was 340, or one case of malarial fever to every seven employes.

Statistics from the Hospital of the Texas & Pacific Railway, Located at Marshall.—This railroad extends from Marshall to El Paso, a distance of 700 miles:

	Total number patients treated in hospital.	Number cases malarial fever.
Year ending June 30, 1896.....	941	348 (no deaths).
Year ending June 30, 1897.....	1013	289 (no deaths).
Year ending June 30, 1898.....	1242	537 (no deaths).
Year ending June 30, 1899.....	1542	664 (no deaths).
Year ending June 30, 1900.....	1917	1031 (no deaths).
Year ending June 30, 1901..	2256	1313 (no deaths).
	8911	4182

The number of employes on this railway during the year 1901 was 4995, and the number of cases of malarial fever was 1313, or 37 per cent of all employes.

Statistics from Hospital of St. Louis Southwestern Railway, Located at Tyler.—This railroad extends from Texarkana to Gatesville, a distance of about 300 miles. It also extends to within a few miles of St. Louis, Mo.:

	Total number patients treated in hospital.	Number cases malarial fever.
Year ending June 30, 1896.....	2279	1424 (no deaths).
Year ending June 30, 1897.....	1739	816 (no deaths).
Year ending June 30, 1898.....	1701	994 (no deaths).
Year ending June 30, 1899.....	2362	1303 (no deaths).
Year ending June 30, 1900..... ...	1686	951 (no deaths).
Year ending June 30, 1901.....	1588	815 (no deaths).
	11,355	6303

This hospital receives patients from Texas, Arkansas and Missouri. The total number of employes on this railway in Texas, Arkansas and Missouri, during the year 1901, was 3996; for Arkansas and Missouri, 2335; and for Texas, 1661. The total number of cases of malarial fever brought into the hospital for treatment during the year 1901 was 815, or 20 per cent of the employes. In 1900 the percentage who had malarial fever was 32 per cent of all employes.

A summary of the statistics from these three general hospitals showed that the percentage of employes affected by chills and fever was one to every four.

It might be added that it is no discredit to these railroads to have such statistics, and if those who do not preserve any records were tabulated here they would doubtless show the same percentage of employes affected. As in the case of the soldiers in the United States army posts, healthy men might go into unhealthy communities, and so contract the disease. These statistics, it should be observed, refer only to those patients sick enough to be brought into the hospitals, and do not include cases treated all along the

lines of the railways by local surgeons, which would give a larger percentage than one in every four.

According to these statistics here presented, the total number of employes on all these railways during the year 1901 was 9241. For the six years, from 1896 to 1901, inclusive, the total number of employes was 55,446. If a day's labor is valued at $1.50, and each patient lost an average of ten days from work on account of sickness from chills and fever, the total financial loss to the employes of these three railways during the year 1901 was $138,610, and for the six years, from 1896 to 1901, inclusive, the total loss was $831,660.

These three railways traverse the State in three different directions—1400 miles. The United States army posts extend all along the western boundary of Texas, a distance of 600 miles.

Thus, it will be seen that the statistics have been collected from all portions of Texas, and therefore give a fair general average of the proportion of all people affected by malarial fever.

The results go to show that the proportion of employes of the three different railways affected by malarial fever was one to every four, and the United States army posts one to every seven, or a general average of *one to every six persons in the State of Texas.* If we say that one person in every twelve suffers each year from chills and fever, and that each man loses on an average ten days from sickness, and valuing a day's labor at $1.50, and considering the population of the State to be 3,200,000 (census of 1900 gave it over 3,200,000), and estimating that each patient pays $5 for medical fees, the financial loss to the people of the State of Texas, during the year 1901, amounted to the enormous sum of $5,333,320![18]

Just how many people die every year in Texas from chills and fever would be hard to determine, but, if the city of San Antonio be taken as an index, and if the year ending May 31, 1898, be selected (when there was no yellow fever, and when the mortality of the city was quite low, or 14.5 per thousand, based on a population of 55,000), and when the number of deaths from malarial

fever were only 43, it will be seen that in Texas each year upwards of 3074 of its citizens die of chills and fever.

What a commotion it would cause in Texas were it announced that yellow fever destroyed over 3000 of its people annually! And what great haste there would be for capitalists to withdraw their money from us. If we say that yellow fever must go, then why not go one step further and say that malarial fever must go with it?

When we compare the cost of malarial fever with the crop statistics for 1903,[19] it is found that the hay crop of Texas amounted to only $6,750,000, so that malarial fever in Texas cost quite as much as the hay crop; the oat crop was valued at $14,636,896, so that malarial fever cost as much as the oat crop; the rice crop amounted to $7,500,000; malarial fever cost nearly as much; the wheat crop was worth $15,182,950, but one-third of this went to feed the malarial parasite. The boll weevil destroyed several millions of dollars worth of cotton last year, and $50,000 was appropriated to get rid of the weevil; while the malarial parasite cost over $5,000,000, and snuffed out the light from 3000 of its people, but nothing was appropriated to get rid of the malarial parasite.

The Prevention of Malarial Fever.—From the standpoint of political economy, it may be asked, is it necessary that 3000 people in Texas should die of malarial fever; and is it necessary that $5,000,000 be spent annually for the luxury of having chills? I think not, and I believe the day will come in Texas when this disease will be regarded as being totally unnecessary for the general welfare of us all.

Two facts should be borne in mind—malarial fever is a "catching" disease; and malarial fever can be prevented. The only way which has ever been proven that the disease can be communicated from the sick to the well is through inoculation, and the most common way is by inoculation from an infected mosquito. All *else is theory, devoid of proof.*

There are two direct methods of getting rid of malarial fever.

First to destroy all malarial parasites with quinin, and the second to destroy all mosquitoes. There are several indirect ways of lessening malarial fever in Texas. The best practical subsidiary method is offered by a campaign of education among the laity which would show them just what the disease really is, how it is transferred from the sick to the well, and how the sick person becomes a menace to his neighbor. In the cities, boards of health should place the disease among the list of infectious or contagious diseases, and the law should require all cases of malarial fever to be reported. The different cities and towns in this State must make appropriations of money to carry on this work. In the rural districts where no boards of health exist, and where the disease is more prevalent than in cities, local clubs should be organized to work in unison with boards of health of cities, to look for and to compel the proper precautions to be taken in guarding against the disease. In those cases who are in destitute circumstances, if nothing else be done, a closely fitting mosquito bar should be furnished free of charge to the patient, together with a sufficient amount of quinin to destroy the parasites which produce the disease. The patient who already has chills and fever, especially during the early spring months (these are usually the chronic cases which continue during the winter), should at once be placed under a mosquito bar which fits closely around the bed (not one which is simply spread over the face, which, of course, would do no good), so that the malarial-carrying mosquito can not get at him, while at the same time quinin should be given the patient to destroy the parasites. In this way the mosquito can not convey the disease to all the neighbors and friends. Infected mosquitoes which still remain around the bed-room should be caught and killed. They may be easily caught by placing a wide-mouth bottle over them as they hang on the wall or ceiling. They may be driven from the sleeping room by burning sulphur or camphor.

Those people who have already been exposed to the disease should take quinin for several days in order to destroy the spores of the malarial parasite injected by the mosquito.

We should especially watch those cases of malarial fever which make their appearance during the spring months. These cases are usually relapses of those who have never been cured during the fall months, and, if we are careful to make close inquiry, we will generally be convinced that these cases have had malarial fever during the previous year. In such instances it appears that a certain immunity has been conferred upon the patient, and that during the winter the small number of parasites present in the blood are not sufficient to produce the symptoms of the disease. But at the outset of warm weather the parasite comes out of its hiding place, and the patient develops a chill. In certain chronic cases of malarial fever there appears to be a tolerance upon the part of the system which permits it to harbor a few parasites without giving rise to fever. In fact it has been calculated (Liverpool School of Tropical Medicine—Memoir No. I) that in order to produce an attack of fever there must be present in the body 250,000,000 parasites. Therefore, these early cases should be closely watched. As in the case of yellow fever, people suffering from malarial fever and coming into the State should be kept under surveillance. It is also necessary to remember that the malarial-carrying mosquito seldom bites during the day time. It usually prefers the night, so that it is important that the mosquito bar should fit snugly around all portions of the bed. The malarial-carrying mosquito—Anopheles —only flies upwards of half a mile for its food. It requires about three or four days for the Anopheles to digest its meal of blood.

Another indirect method of combatting the disease is offered by a thorough system of drainage, so that mosquitoes will not multiply. As a general rule, it may be stated that the malarial-carrying mosquito does not breed in barrels, buckets, and receptacles around an inhabited house, but prefers to breed in slowly flowing streams of fresh water, and especially those containing a small amount of greenish moss or algæ. I have found hundreds of the larvæ (or wiggle tails) of these mosquitoes lying flat upon the surface of such streams.

To destroy these larvæ, I have found by experiments, carefully

conducted,[20] that a strong solution (say one pound to ten gallons) of tobacco in kerosene oil most efficient. On account of the rapid evaporation of the oil, this solution should be applied at least once every two weeks. Wherever marshes or pools of water exist in the neighborhood of cities, such should be drained. The British people have spent upwards of $200,000 in their possessions in the tropics, the German government upwards of $50,000, and the Italians probably the same amount in combatting the ravages of malaria. In America, New York, Massachusetts and New Jersey have all declared war against the mosquito.

Texas has offered a reward of $50,000 to get rid of the boll weevil, and to save its cotton. If it has made any appropriation to get rid of chills and fever, and thereby save the lives of 3000 of its people annually, I have not heard of it. Human nature is a very strange thing.

Representing as we do the correct idea in this matter, I consider it our duty, whenever the occasion presents itself, to speak on this question of malarial fever and its prevention, in order that we may get rid of a disease which has become so harmful, so very prevalent, and thereby help to make this State what it ought to be, a healthful, grand old State, called Texas.

[NOTE.—My thanks are herewith returned to Dr. W. G. Jameson, of Palestine, Chief Surgeon of the International & Great Northern Railroad; Dr. J. E. Moore, of Marshall, Chief Surgeon of the Texas & Pacific Railway; Dr. C. A. Smith, of Tyler, Chief Surgeon of the St. Louis Southwestern Railway, and Dr. Charles Smart, U. S. A., Washington, D. C., for statistics.]

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A CASE OF MALARIA CYSTITIS.—PARASITES IN BLOOD CELLS OF URINE.

ROBERT WESTPHAL, M. D., YORKTOWN.

Though probably all who are present know that in malaria we may find pharyngitis, tonsilitis, laryngitis, bronchitis, gastro-enteritis colitis, hepatitis and nephritis, it is not satisfactorily demonstrated that the presence of the plasmodii in great numbers in the blood vessels of the organ affected constitute the cause or one of the important factors in producing those inflammations. If the malarial parasite is a factor, is it the only factor or cause *per se*, or does the malarial infection, by lessening resistance, prepare the soil in these organs and localities for other pathogenic bacteria, or do both act together to produce the condition?

According to Osler, in the comatose form of pernicious malaria "the special localization of the infection is in the brain, where actual thrombi of parasites with marked secondary changes in the surrounding tissues have been found." This condition may be found even when no parasites have been demonstrable in the peripheral circulation before death.

In the algid form, to again quote from Osler, "Marchifava has shown that the gastro-intestinal mucosa is often the seat of a special invasion by the parasites, actual thrombosis of the small vessels with superficial ulceration and necrosis occurring."

In the hemoglobinuric form (Journal American Medical Association, Vol. XLI, No. 10, page 606), Shropshire states that "Ewing reports the examination of kidneys after death in one case, and he said he was unable to find or demonstrate the parasite in the peripheral circulation, but at autopsy the kidney capillaries were found to be filled with them." And then Shropshire goes on to say that, "in every case at autopsy in the pernicious form, the

parasites are found in the spleen and the brain in the comatose forms, and stomach and intestines in the choleric or enteric forms."

I wish to report a case of cystitis in which, in my opinion, the presence of the malarial parasite in large numbers in the blood vessels of the bladder walls was a cause, if not the only cause. Case, woman about 36 years of age, white, married, mother of two children, of large stature, weighing about 170 pounds. Said she had always been in good health. No history of malaria. Three or four days previous to the time when I was called, she noticed that she had to urinate more frequently than usual and that the act was painful and accompanied by straining. She also noticed that the urine was turbid and bloody, the blood being mostly in clods mixed with mucus. She had no menstrual discharge at the time. When I was called, the naked eye appearance of the urine had changed in so far that it did not appear bloody any more. Otherwise the condition was aggravated. She complained of backache, pain over the region of the bladder, appetite impaired, felt bad generally. On examination, found her temperature to be about 99.50, pulse slightly accelerated, tongue coated, pain and tenderness on pressure over the pubic region, and, on deep pressure, tenderness tending upwards on both sides along the course of the ureters, otherwise examination proved negative. On examining the urine, I found it to be pale, turbid, of a specific gravity of 1020, acid in reaction. On testing the filtered urine for albumin, I found only a trace, no sugar. The sediment obtained by the centrifuge examined microscopically showed besides epithelium, etc., a great many leucocytes and red blood corpuscles, and, in many of the latter, the hematozoa of malaria live. In a stained specimen of the sediment at least half of the erythrocytes were found to be infected.

I put her on capsules containing quinin sulph. 5 grains and salol 2 grains, one capsule every three hours, besides I gave her seven and one-half grains of urotropin four times a day and a teaspoonful of lithiated sorghum comp. every four hours. Two days

later I made another examination of her urine, found it less turbid, still containing a good many leucocytes, but no staphylococci or erythrocytes. Kept her on the same treatment, except that I gave her the lithiated sorghum comp. only three times a day. She reported herself well in a few days.

I had another case almost exactly like this in an older woman (past 60). She had had an acute attack of remittent fever about three months previous.

SOME OBSERVATIONS ON MALARIA.

JOHN H. FITZSIMON, M. D., CASTROVILLE.

Ten years ago I looked upon malaria as one of the easiest diseases to treat. I had wonderful results with quinin in patients who had come from other places, using only twenty-four or thirty grains. I now find that such results are not so common in my practice, while malaria is very common. It is established beyond doubt that the mosquito, of the Anopheles variety, is the agent by which the plasmodium malariæ is introduced into the system. Prophylaxis, then, seems simple enough, and, when it can be carried out, ought to be effective. Destroying the insect and its larva and the use of netting is an easy procedure if it will be carried out, but it must be thorough, for our danger is not alone from man, as I have found the plasmodium in horses. I have no doubt other animals are affected.

Investigators report that there are three varieties of the plasmodium: tertian, quartan, and estivo-autumnal. All other so-called varieties of malaria are simply due to the various times at which the system has been infected. The tertian or quartan variety is what has been the most prevalent in my practice, principally the former. In regard to the estivo-autumnal I have no present knowledge. When we have a simple infection to treat of either the tertian (forty-eight hours) or the quartan (seventy-two hours) variety, shown by chill, fever, and sweating every second or third day, it is no great trouble to treat the patient. Many do not consult a physician, but use quinin or some patent medicine containing quinin themselves. Unfortunately they are very often successful in allaying the attack, and so treat the matter lightly. Many physicians do the same because of the rapid result generally obtained by quinin, discharging many patients as cured, when, in reality,

they are only relieved. During a long, cold winter there is a probability of their having no relapse. Should the contrary condition exist, and they do consult a physicain for the relapse, or some other ill-defined sickness, you then have one of the most difficult diseases to treat successfully. This is due to its chronicity, easily explained by the nature of the infection, as our remedy, quinin, is only effective on the spores in the blood. If the time of sporulation was always the same, we would have but little difficulty, but there are so many causes to prevent this—such as different times of infection, so that the "crops" mature at different times, effect on various organs due to the poor blood supply, and the difficulty of knowing just how much of the remedy to use on account of idiosyncrasy or intelligence of the patient, as well as previous condition of health.

My observation has led me to believe that a relative immunity to malaria can be obtained through being born and raised in a malarial region, but, on the other hand, I know that in persons who have never lived in a malarial region the affection can assume a very insidious form. They can for a long time resist the more marked results of the infection, as chill, fever, and sweating, and for years be treated for other affections, such as uric acid, catarrh, etc. The microscope will always help to determine the matter when our diagnosis by means of quinin is doubtful, but there are times when its use is not possible or can not be done conveniently. In such cases diagnosis is not so simple a matter, for we do not always have the "trinity," chill, fever, and sweating, to help us, for the chill is very often so slight as to appear absent altogether, but is replaced by some other symptom. With so-called "dumb chills," there is a very slight rise in temperature, maybe subnormal. In the majority of cases there is a sweating stage, which may also be very slight and not noticed if it is warm weather, which terminates the paroxysm, lasting some six or eight hours. Patients will possibly only complain of feeling tired with various neuralgic pains, which they will ascribe to weakness, and many of us will do the same unless we have some pet theory with which to fit the case.

If you are fortunate enough to have one of these patients in your office when some of these symptoms are present, and where you can examine the fresh blood, you will find the plasmodium and spores always present, although the spores may not be so numerous, due to the time of the paroxysm.

The tongue in malaria, especially in this indefinite form, the books speak of as large and indurated, more or less coated, but none of them that I have read mention the presence of a number of very minute red spots found on the edges of the tongue near the point. These are very distinct in color from the surrounding tissue, and in some instances accidentally accompanied by enlarged papilla. To me they are diagnostic of malarial infection, for in every instance in which the tongue has shown these spots I have found the plasmodium and spores in the blood. I have made probably two hundred examinations during the last two years. Malaria is often not the only condition present, but it is a complication which ought to be considered. In using this means of diagnosis when a blood examination was not convenient, I have been fortunate in relieving some very serious conditions by anti-malarial treatment.

A Mexican boy, aged 5 years, was brought to my office in an unconscious condition, temperature 106, pulse 140, with a history of having been suddenly seized by the attack while playing—previous health good. There were choreic movements of the right arm and leg, and the mouth could only be opened with difficulty. The parents insisted that the attack was due to his having swallowed glass. However, I took his tongue for a guide (subsequently examining his blood), and by means of cold applications controlled the fever, and, administering quinin later on, found him better the next day, but there was a partial paralysis of the leg and arm as well as partial loss of speech. All cleared up in a short time under quinin, and there has been no repetition of the attack.

A man 56 years old, saloon keeper, was found unconscious about 8 a. m. on the street, having fallen, and showing symptoms of apoplexy with fever. He recovered under quinin and epsom salts.

Other cases simulated melancholia (two women), appendicitis, various skin diseases, dysmenorrhea, etc. Most of these cases guided by the tongue have certainly taught me that malaria can not alone intensify, but simulate very many diseases.

The form I have had to deal with has been the tertian variety, and I believe it is the understanding of investigators that the parasites live mainly in the spleen and bone marrow, lying there for long intervals unaffected by quinin. One authority states they are not sources of infection for others while there. However, when sporulation occurs, the parasites are to be found in the peripheral blood, and a relapse of malaria is noted. It is in this condition that quinin is effective. My treatment has been to give to an adult thirty grains of quinin followed by 20 grains every second night, or four doses in all; then ten grains every night for an indefinite period, and, should there be a relapse of the fever, I would give twenty grains at its subsidence. I also treat whatever symptom is most prominent with the appropriate remedies, and advise mosquito netting. Very few follow this latter advice. Methylene blue I have used a little with some good results, save its irritating effect on the bladder. I have tried the other remedies recommended, but, as I find quinin has given me good results, I have dropped them all excepting arsenic.

DISCUSSION.

DR. W. R. BLAILOCK, Dallas: I should not say anything on this paper but for the fact that the doctor has laid special stress upon the use of the microscope in making a diagnosis of malaria. It is not the first time that the subject has been referred to on this floor today, and I wish to call attention especially to that feature of the subject. I have had some experience in the use of the microscope for the last thirty years, and, since the discovery of the malaria plasmodium, I have used it quite frequently in cases of suspected malarial fever. Now we know that those parasites that infest the red blood cells are not of uniform morphology; for instance, if we have a chill recurring every second day, the metamorphoses through which this plasmodium passes is such that its morphology depends upon the time the examination is made in relation to the chill. A favorite way of staining with me has been a 3 per cent salt solution colored with methy-

lene blue. This is placed on a part of the skin that has previously been made aseptic. A prick is made in the drop of staining fluid, and, as the blood exudes, the parasites are stained. Ordinarily the 3 per cent salt solution would destroy the leucocytes, but I have found in practice that often this is not done, and leucocytes are also stained by this fluid, so that one not an expert in microscopy might mistake the staining of the leucocytes for malaria plasmodium. Now, if quinin has been used in the case, experience has taught me, and I believe it is the observation of others who have experimented under these conditions, that it is difficult to find any of this plasmodium. If we can take the case during the algid state of the disease, then get the blood, it is no trouble to obtain the malarial parasite; but, if quinin has been administered, I have found it very difficult to find them. Under favorable conditions, that is a most excellent method of making a diagnosis, but the ordinary practitioner coming in contact with malaria has not the time nor the experience to make an accurate diagnosis in that way. In the laboratory a skilled man may make this diagnosis, and become sufficiently skilled to distinguish the different stages of the plasmodium, but I do not believe the ordinary practitioner can do it. In preparing slides I have stained the leucocytes until I could not tell the difference between them and malarial plasmodium. Such being the case, I would like to know of this Association whether that is a practical way for the general practitioner to diagnose malarial fever, to the exclusion of quinin.

DR. WOLDERT: In the discussion of Dr. FitzSimon's paper I omitted to touch on the term "malarial" region. I hope we will some day quit using the term "malarial" region. I do not think we should use that term, but should properly call it "infected" region. There is no reason why Texas should have more malarial fever than New York or New Jersey, where they have as many mosquitoes as in Texas. In answer to Dr. Carter's question as to the work of Dr. Hirschburg, I will say that I have not seen his work. However, he might have been mistaken in his deductions in not having his mosquitoes to suck blood and to have deposited eggs. In order for the Anopheles to become infected, it must have laid eggs and sucked blood. Dr. Hirschburg might have made the same mistake that I made for fourteen months. Possibly the reason I did not get results quicker was due to the fact that the mosquitoes used never laid eggs, nor sucked blood. The question of contracting malaria by breathing poisoned atmosphere and by drinking water poisoned with malarial parasites has long since been exploded. Half a million dollars and eight years of time has been spent by investigators in disproving that theory. All the proof has gone to show that not one case of malarial fever has ever been caused in any other way than through the bite of an infected Anopheles. Therefore, let us in returning to our homes, bear these facts in mind, and thus prevent the disease by placing our cases of malarial fever under well-fitting mosquito bars, and

more directly combat the parasite by administering large doses of quinin. In my opinion the diagnosis of malaria is a very important question. While the methods are all old, I still find about me a good many physicians who are not quite familiar with the technic. One can not depend alone upon the clinical symptoms when it comes to making an accurate diagnosis of malarial fever. By aid of the microscope we can make a diagnosis within five minutes, and thus settle the question of malarial fever. The quickest method with which I am familiar, and the one I generally use, is as follows: Prick the end of finger with a large-sized needle and brush away the first drop of blood, then to the top of the drop of blood touch a clean cover slip (that is, one which has been recently cleansed with alcohol and cloth), then superimpose upon another clean cover slip, and separate by sliding the cover slips along the plane of the surfaces. Do not jerk the cover slips apart. When dry fix the specimens in formalin and alcohol (half teaspoonful of alcohol containing two drops of formalin) for one minute, and afterwards wash the specimen by drawing it backwards and forwards in a glass of filtered water; dry and stain for fifteen to thirty seconds in a saturated solution of thionin (Cojit's thionin—Grübler's does not seem to be so reliable) in 50 per cent alcohol 20 c. c.; 2 per cent aqueous solution of carbolic acid 100 c. c. Wash in water as before; dry, and mount in Canada balsam. By this method the red cells are stained a greenish tint, the malarial parasites and nuclei of the leucocytes a reddish-violet tint. To examine for malarial parasites, only 1-12 oil immersion lens should be used. This method was one devised by Futcher and Lazear (Bulletin of the Johns Hopkins Hospital for April, 1899). Another quick method is that of eosin and toluidin blue (Grübler's). Eosin one and one-half grains; 50 per cent alcohol, one ounce. Select the blood as above, and fix for one minute in absolute alcohol (or by heating very gently over flame of an alcohol lamp), then stain for one minute in eosin; wash in water; dry; stain for three to five minutes in a saturated solution of toluidin blue; wash in water; dry; mount in Canada balsam. By this method the malarial parasites are stained blue and contain the small black granules of the parasites, while the red cells are stained red. The solution of toluidin blue should be "ripened" for two or three weeks before being used. Methylene blue is unreliable, and leads one frequently into trouble. It is not to be compared to toluidin blue.

DR. FITZSIMON: From the discussion on my paper it is evident that my words were not well chosen. I only wished to emphasize the fact that I have used the microscope to demonstrate the fact that malaria was present in the system when these peculiar markings occurred on the tongue. I think the other criticisms that the gentlemen have made will possibly be better answered by the doctor who had a more elaborate paper on the subject.

THE MEDICAL SIDE OF APPENDICITIS.

R. T. MORRIS, M. D., HOUSTON.

When I state that there is a medical side in the treatment of this disease the logical sequence is that there is also a surgical, to which I most earnestly agree. My purpose in presenting this paper is to call your attention to those cases which should be treated medicinally, and the best method to be observed in their management.

Ultimately most cases of appendicitis require the attention of the surgeon, but their early management by the physician, and their treatment when it is too early for a late operation and too late for an early operation, is deserving of the most careful consideration.

The surgeon who immediately operates in every case, regardless of condition or duration, is far more dangerous than the disease. The surgeons themselves do not present an unbroken front. There is dissension in their ranks. One extreme operates as soon as a diagnosis is made, the other only operates when there is evidence of pus. Early discussions have elicited many striking epigrams, but at the sacrifice of clearness, such as: "When in doubt, operate"; "delay is responsible for more deaths than any other factor"; "too early for a late operation and too late for an early operation"; "no such thing as medical treatment"; "in every fatal case there was a time when an operation would have saved patient," etc.

I believe that the profession is now seeking a more conservative ground. The indiscriminate operator has been relegated to the junk shop of the past with the over-zealous ovariotomist who needlessly spayed so many women.

The frightful mortality following operations at certain stages of this disease has forced the profession to the belief that there is

a time when you must not operate; that better results are obtained by an intelligent medical treatment. A study of this mortality furnishes a most convincing argument. Treeves states that "the greater proportion recover spontaneously—general mortality not above 5 per cent." Sonnenberg reports results of 965 operations performed between 1890 and 1902. From 1890 to 1897 there were 175 operations on acute cases and thirty-three on interval cases, with a mortality of 18 per cent. Now, between 1900 and 1902 there was the same number of operations in acute cases (175), but 240 interval operations, with a mortality of 7 per cent. In other words, the mortality bore an inverse ratio to the number of interval operations.

Deaver and Ross reveiw 416 cases of appendicitis. The mortality in acute cases operated upon was 15.3 per cent; in chronic cases, 7 per cent. They state that such a difference in mortality is a convincing argument against delay in operating.

If we could convert the acute into chronic cases, we would substitute a 7 per cent mortality for a 15.3 per cent mortality—a condition of affairs much to be desired, and, in my judgment, a judicious medical treatment in the great majority of cases will make the change.

Oschner reports 337 cases with a mortality of 2 per cent. Here I wish to state that to Dr. Oschner is due the credit for the introduction of the most rational and scientific medical treatment for certain phases of this disease.

When shall medical treatment begin? From the first visit. When called to a case of cramps, vomiting, and rigidity of rectus muscle, absolutely prohibit nourishment and purgatives by mouth; in fact, the above is a safe rule to follow in all cases of abdominal pain, regardless of the region. If such a course is pursued, the great majority of appendical cases will never reach the purulent stage; the infection will be confined to the appendix, and an interval operation, with a mortality of 7 per cent, can be performed. This treatment is especially applicable to those cases that are seen late in the disease, when an operation would rapidly hasten

the end. This type has such chracteristic symptoms; drawn and pinched features, tight and tympanitic abdomen, rapid pulse, and cold extremities. Oschner states that in his personal experience no case of acute appendicitis has died in which absolutely no food of any kind and no cathartics were given by the mouth from the beginning of the attack.

When shall medical treatment cease? As long as the infection is confined to the appendix, an operation can be performed with a mortality of less than 1 per cent. It is the consensus of opinion that the peritoneum is not invaded the first forty-eight hours, excepting in a small per cent of fulminating cases, consequently the time for an operation in acute appendicitis is before forty-eight hours have elapsed. However, many cases are not seen sufficiently early, many refuse an operation, and quite a number are so situated that conditions are unfavorable for such a procedure. After the period mentioned, the operative mortality is so high, even in the hands of the most expert surgeon and under the most favorable surroundings, that the best interest of the patient is served by the institution of a reasonable and conservative medical treatment, which should be continued until all inflammation has subsided or the general peritoneal cavity has been protected by an adhesive exudate, after which a low mortality operation can be performed.

To appreciate the advantages of medical treatment, we should understand the progress of the disease. During the first forty-eight hours the inflammation is within the appendix, regardless of the cause, whether due to bacteria, trauma, concretions or strangulation. This inflammation will either abate or progress to ulceration, perforation, circumscribed abscess, or general peritonitis. Realizing this, our treatment should be directed towards abating the inflammation, or, if the peritoneum is involved, to limiting the invasion.

When a plan has been evolved whereby this can be successfully accomplished, the great problem will be solved. The nearest approach is the treatment recommended by Oschner.

The beneficial effect derived from rest to an inflamed organ or tissue is so generally appreciated that it would be a waste of time to discuss it. To secure the much desired rest for an inflamed appendix, we must stop peristalsis; by so doing we will prevent a rupture if it has not occurred, and if it has, we will prevent the spread of the infection and favor its limitation by the formation of adhesive inflammation. When food is put in the stomach a peristaltic wave is started, which extends beyond the ileum. This movement of the bowel irritates the appendix, aggravates the inflammation, and if a rupture has occurred, scatters the poison over the abdomen. If a small amount of food will do this, how much more dangerous would be a purgative! To relieve the nausea, vomiting, and pain, gastric lavage is recommended. Such a procedure in some cases is an important factor in the treatment. The lavage removes the undigested and sometimes toxic particles of food. The good effect is surprising; nausea ceases, restlessness abates, inflammation subsides, and an apparently hopeless case is converted into a harmless one.

If the pain is severe, morphin hypodermatically is administered and repeated as occasion requires. A few leeches over the appendix have had a magical effect in the hands of Treeves and Oschner. An ice bladder over the appendix is sometimes soothing to the patient.

Nourishment.—All feeding should be by the bowel. Predigested foods, such as liquid peptonoids or panopepton in salt solution through a rectal tube, will answer every purpose. My custom is to give one ounce of liquid peptonoids in twelve ounces of normal salt solution every five hours. Such a diet can be continued exclusively for a week or ten days, or even longer, if necessary.

In concluding, I wish to emphasize the following points: Do not give purgatives or nourishment by mouth to a patient with any symptom of appendicitis after the first forty-eight hours; treat medicinally until an interval operation can be performed.

DISCUSSION.

DR. BLAILOCK, Dallas: I shall perhaps startle this audience by taking an exactly opposite view, apparently, from that taken by the writer, Dr. Morris. I take the position that, strictly speaking, there is no medical treatment for appendicitis. Now, in making that statement, I think I can agree thoroughly with what the essayist has stated in his paper. What I understand by treatment is something capable of conducting the sick patient back to a state of health without any other expedients. Now, as I understand Dr. Morris's position, as I have heard him announce it, his treatment is to abstain from the administration of fluids and purgatives into the stomach, feeding by rectum, watering by rectum, and tiding the patient over the critical period when the surgeons have learned it is dangerous to operate and conducting them to an interval when he insists an operation is necessary. During the first forty-eight hours, when the inflammation is confined to the appendix, the rate of mortality from operation is very low. Who that has had any experience with appendicitis thinks that when a patient has once had a well-defined case of appendicitis he will be freed from it all the remaining days of his life? I believe right there is where the danger comes in; I believe that there should be no medical treatment announced for appendicitis. Would a gynecologist, would the gentleman who has just been introduced as an authority in gynecology (Dr. Reed), recommend the removal of the ovaries without first instituting some preparatory treatment? Can we say that in hysterectomy for cancer that the necessary administration of purgatives for four or five days, or a week, as the case may be, or in case of an obese person, where a herniotomy is to be done, that dieting to remove the excessive fat can be called medical treatments for these diseases? I say they are just adjuncts, just preparatory to the work that must be done, and I believe that if we urge the fact that appendicitis is a surgical disease many patients will then live who now die.

DR. SAUNDERS, Fort Worth: I do not rise to take any issue with the author of the paper except in this respect. Just as Dr. Blailock said, it is very dangerous for it to be spread broadcast to the world that there is a medical treatment for appendicitis. We should rather say that there are certain conditions under which appendicitis should be operated for, and certain other conditions under which an operation should not be performed. The trouble about the position taken in the paper is this: that, as Dr. Oschner has said so well, and as those of us who have seen it so thoroughly tested know, this medical treatment should be applied to cases that should not be operated on until they have been tided over this peculiarly dangerous time; but, if it is to be adopted as the universal practice, to the exclusion of surgery in the first stages of appendicitis, when the surgeon says the patient should be operated on, it is a dangerous thing. Because, under this

plan of procedure, many who die in the primary attack will die without the aid of surgical relief which could have saved them. Now, if it is applied as Dr. Oschner applies it, only to those cases which are inoperable at the time, it is well and will save many lives undoubtedly; but it will make a wrong impression to teach that this is a curative process, and I do not understand that this is the case, but that it is to tide them over certain conditions. If it is intended to check a great deal of wild, reckless, and ill-advised surgery, I say amen. If it is intended to raise a doubt as to the efficacy of the office of the surgeon within appropriate limits, I say nay. Dr. Blailock is unquestionably right.

DR. HERZOG, Brazoria: I only want to say I think Dr. Morris is right. Thirty years ago we did not operate for every case of appendicitis. I think I cure just as many as other doctors, and I do not perform any operation. Now, the doctors when they find a case of appendicitis say "we must operate." They operate, and say it was a very successful operation—*but* the patient dies the third day.

DR. JOE WOOTEN, Austin: I would like to ask Dr. Morris how he would make a differential diagnosis between fecel impaction and involvement of the appendix where he was called in and found the patient suffering from tumefaction, dullness, and tenderness over the right iliac fossa, together with fever, nausea, and vomiting? Dr. Morris: The diagnosis would in that case be very difficult. Dr. Wooten: By the Oschner method, would you expect to relieve the fecel impaction and clear up your diagnosis without resorting to the use of salines and high rectal enemas? Dr. Morris: I would give high rectal enemas. The indiscriminate use of cathartics in those cases is unwarranted, because it aggravates the condition, and, if an operation later is necessary, it makes the mortality higher.

DR. MORRIS, closing: I appreciate the general discussion that has been elicited by my paper. I think perhaps I spoke indistinctly; that the gentlemen did not get everything I said in my paper—at least the criticisms lead me to think so. The paper is denominated the medical side of appendicitis. If the gentlemen had listened closely, they would have heard me say that ultimately most cases of appendicitis fall into the surgeon's hands. I also had the pleasure of hearing Dr. Oschner express his views on appendicitis, and I have read his little book entitled "Non-Operation Treatment of Appendicitis." One statement which he makes is that he had never seen in his experience an acute case of appendicitis die when food by mouth or purgatives had been prohibited from the very outset. The surgeons themselves are still discussing the question. A member of the medical profession recently propounded some queries to Dr. Wythe, Dr. Morris of New York, and Dr. Oschner pertaining to the treatment of appendicitis. Dr. Morris said operate in all cases, regardless of time and condition. Dr.

Wythe stated that, if he was called in the first twenty-four hours, if a mild case he would not operate, and some of the more conservative physicians are pursuing the same course. My own experience of course is too limited to entitle it to much weight. I have operated on a few and treated medicinally more, and from results I think it would be well for the profession to read carefully Dr. Oschner's book on appendicitis. I believe more die from indiscriminate purgation and indiscriminate diet than from any other reasons. I also stated that in many cases an operation was necessary, but that in acute cases they should be operated upon in the first forty-eight hours, otherwise the inflammation would be out of the appendix and we would have general peritonitis. I do not claim that appendicitis should be treated exclusively by medicine, but I believe the best interests of the patients will be subserved if more attention is paid to that side of the treatment.

THE SIGNS AND PATHOLOGY OF PLEURAL LESIONS.

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My purpose in the present paper is to correlate the symptoms, both subjective and objective, with the pathology of pleural lesions, by a brief discussion, by certain diagrams, and by a series of gross specimens. The best way to bring the subject before you is to pass the chief diseases in review, and for the time I must limit myself to inflammations.

Normally there is no pleural cavity, for the two layers are everywhere in contact. For the extension of inflammations, it is important that these two layers are everywhere in motion, except at the root of the lung. Only when some pathological product has separated the two layers do we have a pleural cavity; up to that time it is only potential.

The mechanism which keeps the layers in contact is the interpleural tension; this in health is always negative, varying from —6 to —8 mm. of mercury.

Normally the two serous surfaces move over each other practically without friction. This is possible only so long as the integrity of the investing endothelial cells is preserved. In acute pleurisy without effusion, one of the first changes is swelling in the subendothelial fibrous tissue with increase in size of the endothelia, and granular degeneration of these, followed by desquamation. From the swelling the two roughened surfaces are pressed together more firmly than normal, and they stick and drag upon each other, since they can no longer glide smoothly. Hence the patient feels a quick pain in the side, which he describes as a stitch, that grows more severe upon movement and deep inspiration; partly because more of the tender surfaces glide over each other and they are more

firmly pressed together, and partly because the movement of the chest wall stretches the swollen area.

In a short time the serum of the blood in the dilated capillaries begins to ooze toward the surface of the pleura, and there it meets a fibrin ferment derived from the dead endothelia and coagulates. Now the raw surfaces are covered by a thin layer of fibrin, which is somewhat sticky, and hence the pull of one sore area upon the other is worse.

In consequence the patient limits his breathing as much as he can and bends toward the affected side to put the parts as nearly as possible in a state of physiological rest. This is a necessary condition for healing, but it brings with it the risk that the adhesions may become organized between the two layers and a permanent band of new connective tissue replace the temporary fibrin.

From the reflex along the intercostal nerves, spasm of the intercostal muscles, and diaphragmatic cramp, the whole side may be tender and painful. The intensity of these combined pains varies from trifling to extreme, and their site may be local or referred to distant points, as above the clavicle, the navel, or the inguinal fossa of the affected side. Yet another reflex is cough, dry and painful in character, and suppressed as nearly as possible. Owing to the pain, the respiration is also controlled, shallow or jerky, and more abdominal than thoracic.

Constitutional symptoms are usually slight. Fever may be absent in a mild case or run as high as 101 degrees F., but it depends in great measure upon the extent of the lesion and the cause. If the disease be bacterial, the particular kind present modifies the fever. When the pleurisy accompanies a lobar pneumonia which reaches the surface of the lung, we find the pneumococcus, and sometimes this is found without the pneumonic lesion. With bronchopneumonia the organism is commonly the streptococcus. Occasionally the staphylococcus, the bacillus coli, the bacillus of Friedlander and others cause the disease, and both as a primary and as a secondary lesion, the tubercle bacillus is responsible for a large number. As a general rule all the constitutional symptoms,

including nausea and vomiting, fever, depression, and in children, convulsions, are more distinct with the pus organisms and extensive lesions.

In a localized form the disease occurs at the apex with tuberculosis, or between the lobes of the lung, and may not be diagnosed, or over the cup shaped base of the lower lobe on the diaphragmatic pleura. In the latter case the pain and the diaphragmatic spasm may be the only local signs, together with abdominal breathing, and the resemblance to peritonitis is very close.

Physical Signs.—The affected side displays a diminished expansion, and this may be recognized in three ways: (a) By inspection from above and behind the patient. This is equivalent to examining a cross section of the chest, and is so valuable that it ought to be part of our unconscious routine in exery examination of the chest; (b) palpation of the two sides with the flat hand. The entire palm and fingers should be placed at exactly corresponding points on the two sides at the same time, while the patient takes as deep a breath as he can; (c) the cyrtometer. The expensive instruments are not necessary. Two flat pieces of lead joined by a piece of stout rubber tubing serve the purpose. With the rubber junction over the spine, the lead bands are brought round on a level and closely moulded to the chest, and the ends crossed in front. Upon the ends a mark is made where they meet in forced expiration and another in deep inspiration, and they are then removed. A tracing of the two on paper, with a rather soft pencil will give the outline of the two sides and the amount of expansion on each. The only thing it does not show is the local lagging when one part, usually over the lesion, expands slowly and irregularly, but this is noted by the eye and can be marked upon the diagram. Such a measurement will give accurate results, even when the chest is deformed.

As a rule there is no marked change in the percussion note, unless the area is large and the exudate thick, and usually this combination is found in the chronic pleurisies. The note would

be a little duller than normal and the breath and voice sounds less distinct.

Friction sounds are among the most valuable physical signs. The sound varies from the lightest grazing to a creaking such as made by a new leather saddle, at times a veritable squeak. At this point I should like to put in a plea for the regular employment of direct auscultation as well as the stethoscopic. With the ear on the chest, or only a thin smooth fabric between, we can appreciate certain characters even better than by the indirect method.

Certain qualities are common to all friction sounds; namely, they give the impression of nearness, of being both very superficial and very local, they occur most plainly where the movement of the pleural surfaces is free, as below and to the outer side of the nipple, in the lower axila, and near the angle of the scapula; they do not shift when the patient changes his position, and are not altered by coughing, and are more marked on deep inspiration. While heard best during inspiration, they may last over into expiration; and by pressing the stethoscope against the chest the sound becomes clearer and greater tenderness is observed. At times the jarring of the chest, as the uneven pleura rub together, is so decided that the flat hand may feel it, and this is called friction fremitus.

From such an acute dry pleurisy the patient usually recovers in two or three weeks. But we should remember the late effects of such a lesion, mainly three: (1) Adhesions which are left between the costal and the pulmonary pleuræ may conduct voice and breath sounds even through fluid in a later attack, and these patients seldom escape with but one. (2) The pull of such adhesions upon the lung may distend the alveoli and cause a local emphysema, which will modify the percussion note of the region permanently. (3) With extensive and thick adhesions, deformity of both the lung and the thorax is almost inevitable.

Pleurisy With Effusion.—Like the former disease, this lesion is sometimes primary and sometimes symptomatic with various fevers and intoxications. Normally the pleural apparatus forms

a lymphatic pump. A moderate flow of lymph passes from the vessels of the two layers, first to the surface and then along the serous membrane to the root of the lung, the thoracic wall and the diaphragm, in all of which places the stomata of the lymphatic vessels take it up. This fluid differs from the exudate in pleurisy, in having a far lower specific gravity, a lower percentage of salts and dissolved matters and almost no proteid.

This fluid must accumulate when either of two conditions prevail, either that it is poured out in greater quantity or the pump is unable to act. Both of these factors enter in pleurisy with effusion, and the fluid is vastly different from that in health. The essence of the process is that it is an exudative inflammation, and that the fluid contains fibrin. The latter closes the mouths of the lymph vessels.

It is said that the amount of fluid must be in excess of twelve ounces before it can be recognized by physical signs. I question the accuracy of this view. I feel sure that we can recognize less than this, but, on the other hand, I have seen four quarts in one pleura go unrecognized until the post mortem.

As the fluid is poured out we get a pleural cavity, and this is of just the size and form assumed by the fluid and increases with it. The fluid has weight and is incompressible, hence it falls to the lowest part of the chest and compresses the nearest lung, as well as distending the sharp angle of the complementary pleural sulcus and pushing out the intercostal spaces.

The respiratory oscillation is lessened or absent, and the interpleural tension is diminished. Furthermore, especially when the lesion accompanies general fevers, like typhoid, the tone of the lung is decreased. By that I mean that some change takes place in its elastic tissue and smooth muscle fibres which makes the lung less resilient, and because of this change we get an abnormal percussion note over the lung affected.

Since the lymphatic pump depends in great part upon the respiratory movements, the point is soon reached, with such an effusion, where it must cease. If now a small amount be removed, the

pump is able to start anew and all the fluid may be absorbed. An expression of this is seen in the daily amount of urine passed by the patient. Before absorption the amount may be normal or less; with absorption, it may rise as high as eighty ounces in the twenty-four hours.

Symptoms.—The onset may be latent or frank. The first is observed especially when the disease is secondary to some other, so that its own symptoms are masked; but too frequently "latent" is a polite way of saying neglected diagnosis.

In a frank onset the constitutional symptoms are more marked than in the dry form. There may be shuddering chills, high fever, more cough, and, in the very young, convulsions; the latter symptom depends upon the combined effect of the special toxin which is acting and the disturbances of the cerebral circulation.

The local symptoms may be preceded by all those given for the dry form, but the pain is commonly more severe, and referred to the region of the nipple, axilla, navel, or lumbar and elsewhere. The dyspnea may be more excessive. As the fluid accumulates the friction and pain are apt to diminish. This is not true of the dyspnea, but its character varies. Instead of being jerky, heaving, labored breathing because it hurts to breathe, it becomes the quieter, more constant and more cyanotic dyspnea of diminished air space and consequent excess of CO_2 in the blood.

On account of the pain and the dyspnea the patient usually lies upon the affected side, but it is interesting to note that these cases soon establish a tolerance. No one uses the entire lung all the time, and when the patient is quiet in bed he needs comparatively little. So we often see the dyspnea slowly subside, to return only on exertion, like sitting up, although the chest may be full of fluid.

I have seen a strong man of six feet and over, built proportionately, with both pleural cavities full, who was able to walk about his room with no subjective dyspnea, and I well remember how angry he was at his implied helplessness when I insisted that he

should not walk to the hospital several blocks distant. He had been sick three weeks and had become accustomed to his fluid.

With lesions of either the lung or the heart the dyspnea reaches its worst expression and, of course, does not disappear.

The fever is not distinctive. It tends to become quotidian remittent and usually lasts as long as the fluid is present. One of the best indications that the fluid is being absorbed is a fall in the temperature. At the same time the local temperature of the affected side is one to three degrees higher than the other side. This is due to the fact that the vessels supplying the serous membrane supply also the integument over it, and that when the inner surface becomes deeply congested and hotter, the parietal branches dilate sympathetically and the outer surface is warmer.

Heavy sweats and a septic diarrhea may accompany this stage, especially when the toxin in the fluid is virulent. It is evident that the diarrhea is septic, for after death no corresponding lesion can be found in the intestinal mucosa.

Cough and expectoration are common, from a reflex congestion of the bronchial mucous membrane and consequent increase of mucus, and hence the sputa are simply frothy and mucus, unless from violent coughing little capillary ruptures occur, and then they may be blood-streaked. After puncture and removal of part of the fluid the sputa may become muco-albuminous. When the fluid escapes by way of the bronchi, as it rarely does, there may be a sudden and large discharge of serous coagulable sputa.

The pulse is often much disturbed in both frequency and rythm with large effusions. Sometimes the radial pulse of the same side is almost or quite lost, and sometimes we have the pulsus paradoxus from great obstruction to air entering the chest. The signs in such a case are two-fold, and result from physical examination and from study of the fluid; by the former we recognize that there is fluid and something of its amount, by the latter its character.

In what has been called the first or dry stage we find friction as before, but in addition we often have signs which strongly resemble bronchitis; among these are a high-pitched muffled note,

resistance to the plessimeter finger, weak breath sounds, and a widely diffused sticky rale which has been called friction, but probably is not. I reach this view because it may be heard over a wider area than that of the fluid, and it is heard on inspiration; it is probably due to loss of tone in the lung and partial collapse. It is distinguished from a bronchial rale in being one-sided. Should pleurisy occur with bronchitis, then we have the signs of the latter in both lungs, and somewhere over one of them an apparent increase, more or less localized, due to the pleurisy.

Often the first signs are those of fluid in the most dependent part of the chest, and the position of the patient while the effusion is going on determines which that part shall be. While the quantity is small the lung floats upon it, but as it increases the lung suffers compression. Now since the lung is a solid of three dimensions, fastened only at the hilum, but quite firmly fastened there, it takes a three-fold direction under compression, upward, toward the middle line, and forward as the pressure increases, so that more of the lung comes to lie under the clavicle than under the scapula. Before such general compression occurs, the lower lobe has become almost or quite airless. The shape of the cavity may be seen in the diagram.

It is the tendency of the fluid to accumulate very quickly, for it has the force of the *vis a tergo* behind it and the walls of the small vessels offer but little resistance to its passage out.

The dullness is partly due to the fluid, partly to the compressed lung, and partly to adjacent organs, and in large effusions these all merge. It begins usually at the lowest part of the thorax behind, but by the time it reaches the angle of the scapula the anterior upper part of the chest may give a high, even a tracheal, percussion note. Often the entire back is dull before much is noted anteriorly. Owing to the shape of the cavity, the level of the dullness is higher in the axilla and behind than in front.

Now the quality of the percussion note may be absolutely flat, but often the compressed lung conducts quite well both to and from the trachea and larger bronchi, and hence the dullness may

not be complete even with large amounts of fluid. And in the child, with resilient chest walls, we may even find a cracked pot resonance. To obtain this best the patient's mouth should be open and the tongue forward, the stroke should be delivered during expiration, and the striking finger should rest on the other with a slight after-push.

It is further important to note that while with small amounts of fluid the level of the dullness may change with the position of the patient, when the quantity is large it can not do so.

In direct proportion to the amount of fluid the side is enlarged, the diaphragm is depressed and the mediastinum is displaced toward the well side.

1. The normal traverse diameter of the chest is related to the anteroposterior as 10:7.5, but with fluid this becomes altered. The shape is less elliptical and more circular. At this point the cyrtometer is of value, for measured by a tape we may not notice any increase in size. In becoming circular from elliptical, the cavity of the chest may be actually larger and yet the circumference of the side not lengthened. Moreover, the outside measurement is no guide to the amount of displacement of the mediastinum, and in an old patient, with rigid thorax, this may be the chief element in the increase of size. Usually we can appreciate the change by observation from above and behind the patient. The shoulder is raised, the spine curves slightly to the well side, and the chest bulges.

2. The depression of the diaphragm to any great extent displaces some of the abdominal viscera. On the left side the spleen moves both down and forward, along the costo-colic ligament, so that its whole upper and anterior border may lie beyond the free edge of the ribs. The left lobe of the liver is also depressed, and the three dullnesses of liver, spleen and fluid merge to blot out Traube's area and replace the whole stomach tympany by dullness. Normally the anterior pulmonary resonance begins to be altered by the superficial cardiac dullness at the fifth space, and, about two inches further to the left and below, a deep percussion gives

stomach resonance. Just below the sixth rib the stomach is tympanitic, and laterally at the eighth rib light percussion brings out the lowest pulmonary resonance. Behind at the tenth rib we pass into the dullness of liver or spleen with kidney. These landmarks all disappear as the arch of the diaphragm becomes flatter and the space is taken by fluid. On the right side anteriorly the deep dullness of the liver is met at the fourth space in the mid-clavicular line, and the superficial at the sixth rib. Where liver and cardiac dullness blend, we have Ebstein's angle. Two lines enter into the formation of this angle, the upper limb being a curve with slight convexity to the right, and the lower slanting upward slightly from the middle of the sixth rib to meet the former, at less than a right angle, just inside the right parasternal line. When the diaphragm is depressed by right-sided pleurisy with effusion, the vertical line is straightened and pushed to the left and the lower line becomes more slanting, and thus the angle is increased to or beyond ninety degrees.

A special word must be devoted to the displacement of the heart. The heart hangs from the most fixed portion of the aorta, just where it turns at the third dorsal vertebra to become thoracic. From here forward, along the arch, the attachment becomes less fixed, and the freest portion, from the first part of the arch to the cardiac apex, lies altogether within the pericardium. Consequently, with large fluid collection on either side, the heart as a whole rotates, not from the beginning of the great vessels as a fixed point, but, together with these structures, from the third dorsal vertebra; the widest range of motion takes place between the root of the lung and the anterior leaf of the pericardium, progressively as you go forward.

Hence with fluid on the left side, the apex beat may be behind the sternum or over as far as the right nipple line, in any space from the seventh to the fourth. Here a caution should be given. Normally the conus pulmonalis lies behind the sternum. With a relatively small amount of fluid on the left side this structure may lie just beyond the edge of the sternum and its pulsation may

be mistaken for the apex beat. When the fluid is on the right side the apex may lie in the left anterior axillary line at any space from the sixth to the second. In either case the upper mediastinum may be dull on percussion because of the pleura and contained fluid bulging over across it.

Over the fluid we get no vocal fremitus. I desire to insist upon this because the books do not seem to recognize the value in those cases where bronchial voice and breathing over the fluid make us think of lobar pneumonia. The vocal fremitus depends upon the amplitude of the vibrations communicated to the column of air in the trachea and bronchi, and passed through the lung to the chest wall. There they are felt by the flat hand. Now when the lung is compressed the lung is at a distance and between it and the observer is the fluid, and the latter will not carry the ample vibrations of the voice although it may carry the higher and shorter vibrations of the breathing. This vocal fremitus is of less value in women and children than in men, but if the woman be asked to prolong the voice in low toned detonation it may be clearly felt, and with most children it is appreciable during crying. In a somewhat similar manner the lung modifies the voice at the level of the fluid, absorbing all but the overtones, and hence giving it a bleating quality which we call egophony.

Yet another evidence of the inability of the pleural exudate and compressed lung to convey ample vibrations is found in Bacelli's sign. Namely, that whispering pectoriloquy is transmitted by serous fluid when ordinarily pectoriloquy is limited to the lung.

Still another appears from coin percussion. Here an assistant percusses the anterior part of the chest with two coins while the physician listens posteriorly. Over the upper part of the chest the note is not heard, but through the fluid it is heard as a clear but distant musical ringing.

All these phenomena depend upon different conduction indices between the fluid, the lung and the chest wall.

On auscultation over the fluid, the voice and breathing may be

absent with less compression of the lung, and bronchial with more severe compression.

Over the compressed lung we have Skoda's resonance, tympanitic note under the clavicles, perhaps a cracked pot or a tracheal note, with loud metallic rales and bronchial voice and breathing.

Either over the compressed lung or the fluid we may think of pneumonia, especially when the general symptoms are marked, but the following points will distinguish the two lesions: In pneumonia the chill is harder, the fever higher, the sputa more viscid and voluminous, we may have labial herpes and unilateral flushing of the face, the dullness is less resistant, both voice and breath sounds are increased, vocal fremitus is much increased, and we do not find the bulging of the intercostals and the displacements of the fluid lesion. The aspirating needle also may be required to decide a doubtful case.

Other signs of pleural effusion are a systolic murmur over the pulmonary valve and flatness or prominence of the intercostal sulci. At rare times the serous fluid makes its way to the surface, and appear as a smooth, tense swelling, which grows smaller with inspiration and larger with expiration. This is found most often in the axilla, but is commoner with empyema than with serous fluid.

The Results of Puncture.—The composition of the fluid is of the greatest value in diagnosis. If serous, the disease may be simple hydrothorax or pleurisy with effusion, or the fluid may be purulent. As the specific gravity approaches 1.015 the probability of an inflammatory origin arises, and above that figure to 1.025 or higher, it is certain. The composition of the two fluids, averaged from a number of cases, is as follows:

	Specific Gravity.	Proteids.	Fibrin.	Albumin.	Globulin.
Hydrothorax	1.005—14	1.774	0.0086	1.155	0.63
Pleurisy with effusion	1.020—30	4.82	0.048	1.87	2 00

The higher gravity of the inflammatory exudate and its larger

proportion of coagulable proteids will clear up the diagnosis if there has been any doubt between it and hydrothorax. The fluid is seldom entirely clear, it may even be opaline or milky, from suspended fibrin and cells, and the amount of fibrin may be so large that it jellies on standing. There is usually some peptone and sugar, a small per cent of urea, and, with jaundice, bile pigment.

Empyema, Pyothorax.—The pus may be present from the first or be added to a serous effusion. This latter case may occur spontaneously or be due to careless puncture. In children it is more apt to be spontaneous, and may occur in a few days to within three weeks after the fluid is first observed. With necrosis of a rib, sloughing of the membrane, abscess of the lung, carcinoma of the esophagus, and some other conditions, the pus may be fetid. Sometimes it is jelly like, sometimes it effervesces from the contained gasses. Rarely it is bloody, from the rupture of small vessels in the newly-organized adhesions, or with tuberculosis and diseases attended with hemolysis. Usually the amount of blood is small but it may be large enough to cause anemic cachexia.

The general symptoms are always more severe than in pleurisy, and, when the effusion is putrid, we have the evidence of septicemia; these include dusky hue of the face, dry and brown tongue, a soft and weak pulse, mental stupidity, great muscular debility, and a disgusting odor to the sweat and breath. Often the joints are swollen and tender, there may be an eruption like that of measles, the spleen is enlarged and there is septic diarrhea. In the blood the white cells are in marked excess. The respiration is frequent and shallow, the temperature may run as high as 104 plus, and stay at a high level. What sputa may be present will not show the rusty and sticky qualities of the pneumonic expectoration. Often there is delirium of coma early in the disease, but the patient can usually be roused. Such a case is apt to end fatally within two weeks, whether an operation is done or not.

In general with empyema we have the physical signs of fluid in the pleura, but there are some modifications. For instance there is more distension of the superficial veins of the chest and at times

there may be edema in the wall. The thorax may be more enlarged as a whole, with more bulging of the intercostal spaces, especially in the child. Dullness and flatness are found upon percussion, but Bacelli's sign and the coin sound are not obtained.

In neglected cases we may find at some point a red and shiny protuberance where the pus is pointing through the chest wall. The usual place for this is the fifth space anteriorly, but it may be in the third, fourth or fifth, in the axilla, or near the angle of the scapula. At times there is more than one such point or the pus may have already discharged, leaving a fistula.

The disease is more common in children under twelve than in any other patients, and the pus is often overlooked. As a rule the condition is not necessarily fatal with proper treatment.

In aspirating a case of empyema for diagnosis we are apt to be deceived in our findings at times. In the first place, when the pus is localized by adhesions and surrounded by thick fibrin, it takes quite a little courage to push the needle far enough in. Secondly, the pus may be too thick to flow regularly; but on blowing out the needle a drop at least of pus will be found, and the next time a needle with a larger bore may be used. Right here I want to emphasize a remark of Dr. Robert Abbe's at a discussion of this matter before the New York Academy of Medicine. "Abandon all thought of promoting the absorption of the pus. Get rid of it, by the quickest means." Yet another source of error is a cavity in the lung, near the pleura, into which the needle may pierce. In this case the microscopic examination of the pus discloses necrotic shreds of lung tissue, Charcot-Leyden crystals, and such organisms as are not found in empyema. Lastly, with a subphrenic abscess, and the needle put in too low down, the two layers of the pleura and the diaphragm may be passed and the pus taken from below.

Of the various kinds of empyema I do not need to speak, but one form is so interesting that I shall mention it, namely, pulsating empyema. Dr Light, in the London Lancet for 1891, gives three cases, and one of these I shall cite: Male, aged 20, thirteen weeks

ill; T. 100, R. 38, P. 139 and weak; pulsating area over fourth rib, fourth space and fifth rib near left nipple; pulsation occurs with cardiac systole. Chest opened in anterior axillary line and eighty ounces of pus removed.

This case illustrates in a condensed way the size of the collection and the consequent internal tension, the length of the illness, the comparatively slight fever, that it occurs on the left side and tends to point anteriorly. On palpation of such pulsating local bulgings there is not expansive thrill, as there would be in an aneurism, because the fluid simply carries the beat of the heart, and on removing even a slight amount of the pus the pulsation stops.

Pneumothorax.—Air alone is seldom found in the pleura; commonly it is associated with either serum or pus. The condition is observed on the left side more than on the right, and in males in the proportion of 2:1.

Symptoms.—The onset of the lesion is seldom gradual. Usually it is very sudden. This is determined by the immediate cause. As a rule there is sudden extreme pain and dyspnea, blueness of the face and lips, with rapid and weak pulse.

The minute one pleura is opened the lung on that side collapses, and in addition the mediastinum bulges toward the other side, and the elasticity of the other lung is lessened. Assuming that the total elasticity of both lungs equals 100, the elasticity of the lung affected may be suddenly reduced to zero, and that of the other to 25; which means a reduction of the total breathing space to only one-quarter of the normal. Now the average vital capacity for the male is 230 to 240 cubic inches, or 3.5 cubic inches for each inch of height; and for the female the figures are 145 to 150 cubic inches, or 2.3 cubic inches for each inch of height. Hence with pneumothorax the more spacious male lung would receive only about sixty cubic inches with each breath, and the female about thirty-five cubic inches. The difference per minute is striking:

Instead of, male, 230x20 or 4600 cubic inches, he gets only 1000 per minute.

Instead of, female, 140x20 or 2800 cubic inches, she gets only 700 per minute.

It is no wonder, then, that dyspnea from air hunger and growing accumulation of CO_2 in the blood, with disturbed activity of the heart from these and the mechanical conditions, should render the patient's condition critical. Also it is clear that pneumothorax is worst when the two pleura are healthy, with no fibrous bands to lessen the collapse of the lungs, especially when suddenly developed.

Quite commonly the entrance of the air is easier than its exit, and hence the pressure rises steadily in the pleura until it reaches that of the external air, or even a little higher, and then no more air enters. But before this can occur, the compression of one lung and the collapse of the mediastinum must have reached their extreme and remain so.

Physical Signs.—The chest is in a condition of fullest expansion on the affected side, and motionless. Over this the percussion is drumlike, or sometimes has a metallic clang if the chest walls are not too rigid; the note is usually higher pitched and longer in duration than that of ordinary dullness. The vocal fremitus is lost. Wintrich's sign is often observed. This means that the percussion note becomes louder and higher when the patient opens the mouth, protrudes the tongue and breathes quietly. The explanation is that the percussion transmits vibrations to the column of air in the great bronchi and trachea, and the open pharynx reinforces the sound. In other words, it is just the difference between an open and a stopped pipe in the organ, the closed one giving the deeper note. With both fluid and air in the pleura Biermer's sign is noted. This for the whole pleura is practically the same as Gerhardt's for a tuberculous cavity. The essence of it is that with a change in the position of the patient, like the recumbent after the upright, the percussion note changes its quality markedly, because the rearrangement of the fluid and the air so alters the shape of the resounding cavity that of necessity the note must change upon percussing it.

The line between the upper limit of the fluid or air and the com-

pressed lung is abrupt, and is best determined by crooked-finger percussion. The voice sounds over the lung are ringing or amphoric. The heart, liver and spleen may be much displaced, and on the left side the cardiac dullness may disappear and the high note of the stomach blend with that of the pleural air. With perforation of the lung we may hear a series of metallic tinklings after deep inspiration or coughing. The sound has been compared to drops of water falling into a cistern, and proceeds from a similar mechanism. They are drops of bronchial secretion, or of fluid in a tuberculous cavity, dislodged by the air pressure from above.

A similar but larger sound is produced by shaking the patient, when the movement and splashing of the fluid may be heard. This sign is called succussion, and is best omitted, unless the patient is strong.

New Growths in the Pleura.—The diagnosis is not often made during life, although slight fever, local pain, and cachexia should draw our attention to the possibility. The signs are those of localized dullness, with weak voice and breath sounds, and evidences of fluid. This fluid may be clear or bloody, and on microscopical examination often presents many cells which are undergoing division.

DISCUSSION.

DR. JOE WOOTEN, Austin: I think I voice the opinion of the Association in saying that Dr. Thayer's paper is the best paper we have had here in a long time. I am very sorry, indeed, that it became necessary to cut short the paper and the clinical demonstration with anatomical specimens. I was very much impressed by one particular point in the paper, and one which I was glad he brought out so forcibly, and that is that the pathognomic symptoms of acute pleurisy with effusion, as stated in our text-books, are no longer to be relied upon. In 1896 I read a paper before the Association in which I pointed out, that quite often in children, and especially in cases where the effusion was very extensive, that absence of the voice and breathing and vocal fremitus were present over the affected side, as well as dullness instead of flatness, which might lead one to the diagnosis of lobar pneumonia. Also that in these atypical cases whispering pectoriliquy was present while voice pectoriliquy was absent. The only positive

diagnosis in these cases is by hyperdermic puncture and aspiration. At the time I presented that paper, though recognized by such authorities as Jacoby and Delafield, this clinical condition was somewhat ridiculed. As has Dr. Thayer, I explained the possibility for the occurrence of these atypical physical signs in acute cases by the crowding of the lung well up into the apex of the thoracic side affected and the transmission of the sounds down the chest wall to the ear.

CARDIAC NEUROSIS.—THE NECESSITY OF THEIR PROPER DIAGNOSIS.

GREEN L. DAVIDSON, M. D., WHARTON.

It could be reasonably argued from a clinical standpoint that the heart is the most important organ in the entire body. Upon its action depends the function of every other organ that assists in carrying on the various phenomena of life. The functions of other organs may be suspended for a considerable time without necessarily causing death, but the beat of the heart must go on unceasingly, distributing nutriment to and gathering the waste products from the remotest parts of the body, from earliest life to complete cessation of all physiological action.

The heart is the great commercial agent of the entire animal economy. It is the "national bank" of the system, and handles all the corpuscular cash with which to carry on the wonderful process of metabolism. By virtue of its complex nerve supply, the heart is the most sympathetic organ in the body, and is often made to suffer for the sins of others (neighboring organs).

Its nerve supply renders it extremely susceptible to reflexes, be their causes internal, external, physical, or mental. Thus we see it at all times endeavoring to supply the various wants of the body, coming to the rescue in times of need, and laboring under burdens imposed upon it through our indiscretions, carelessness and ignorance.

Considering, then, that the heart is so sensitive that it responds to every emotion, such as grief, shock, fright, anxiety, intense desire, apprehension, love, hatred, and pleasure, sometimes to the extent of complete collapse and even death, all of which have no pathological lesions behind them, but are of purely nervous origin, is it any wonder that we should find it so much disturbed reflexly from organs which are really diseased?

Among the many causes acting through the nervous system in producing these functional cardiac symptoms may be mentioned the following: blood changes, such as anemia, uremia, rheumatism, the puerperal state, and various toxins. The many disorders of digestion, as hyperacidity, over eating, dilatation and distension of the stomach, cancer of the stomach or liver, constipation and flatulence, which are very frequent causes. The various diseases of the uterus and its appendages, hysteria, excessive use of alcohol, tea, coffee or tobacco, convalescence from acute febrile diseases, loss of sleep, continued mental strain, excessive physical exercise, and in fact *any* disease of *any* organ in the body which exercises a depressing or exciting influence upon the nervous system may give rise to a functional disorder of the heart so closely resembling a true organic lesion as to mislead us and eclipse the real trouble.

Concerning the actual mode by which all these causes produce their varying types of disorder, neither physiology or pathology can yet speak with certainty. We know that stimulation of the pneumogastric nerve slows the action of the heart, while pressure or paralysis of the same increases the rapidity of its beats; stimulation of the accelerator branch of the sympathetic increases the action, and paralysis or pressure upon it slows the action. These two nerves act in harmony in controlling the heart, yet are antagonistic in their action. A paralysis of one has the same effect as stimulation of the other and vice versa. We can thus readily see how such effects could be produced by disease such as enlargement or displacement of the abdominal or pelvic organs (reflexly) through these nerves, or from a general neurasthenic condition in which the entire nervous system is at fault.

The varieties of functional disorder I will briefly mention as follows:

1. Those affecting the force of cardiac action: (a) overaction, which would indicate hypertrophy; (b) feeble action, simulating fatty degeneration.

2. Those relating to rhythm, as the intermittent, the irregular, or palpitation.

3. Those affecting the sounds of the heart, such as feebleness, or accentuation of either the first or second sound, or a muffled sound blending the two into only one sound (as sometimes in effusion into the pericardium), and murmurs of various kinds over any part of the cardiac region either systolic or diastolic (often encountered in disorders of the blood such as anemia, chlorosis, rheumatism, uremia, etc.), and often mistaken for true valvular lesions.

4. Relating to frequency, as the infrequent (bradycardia) or the unusually frequent (tachycardia) which may lead us to suspect an organic disease of the nerve ganglia of the heart, or some nerve lesion of central origin.

In these functional troubles, we may find *any* one or *many* of the symptoms which are present in many of the true organic diseases of the heart. Therefore, when a patient comes to us with a heart trouble, we should inquire very closely into his family and personal history, as to his hereditary peculiarities, his occupation, habits, and mode of living, temperament, previous attacks of protracted illness, etc., and making a thorough investigation of every organ, until we have excluded everything but the heart itself. To illustrate how easily we may be deceived by the most prominent symptoms in these cases of functional troubles, I submit to you a report of a case of a young man whom I have had under observation and treatment from time to time for the last six years, suffering from recurring attacks of paroxismal tachycardia.

F. W., aged 19, clerk,—moved to Texas from Mississippi in 1898; mother says her attention was first called to his peculiar trouble about one year prior to moving, when he was 12 years of age; first attack attributed to having eaten a large quantity of green apples, resulting in colic and other symptoms of acute indigestion, accompanied by this rapid heart. He was treated by a doctor of Coldwater, Miss., who diagnosed his case pericarditis. This attack was followed by others, one of which I am informed lasted him about two weeks, during which time he grew very weak, and became so very sick that she thought he would not recover,

when suddenly his heart gave one or two tumultuous bounds and resumed its normal action, and he was well again, got out of the bed, and went his way as usual until another attack would occur, as they continued to do, lasting only a short while. Soon after their arrival I was called to see him during one of these attacks, and, after hearing his mother repeat the above history, and on examination finding it impossible to count the pulsations of this wild and unruly heart, noting the pallid and distressed countenance, with some slight disturbance of respiration, cold extremities, the body bathed in a profuse perspiration, although the heart showing no sign of disease other than rapid action, I (as we often do, but should not) accepted the diagnosis of pericarditis, and treated the case from that standpoint. I used ice over the region of the heart, applied a blister, etc., gave him veratrum, digitalis, aconite, the bromides, and such remedies as tend to show the action of the heart (first trying one, then another), none of which had any perceptible effect on his heart. This condition ran on just the same except that he complained of growing more tired, and of extreme weakness until the morning of the fifth day, when he became nauseated and raised up suddenly, leaning over the side of the bed and began vomiting. When he lay back on the bed the scene had entirely changed. The color had returned to his face, his countenance expressed a look of ease and comfort, respiration was smooth and quiet, the extremities becoming warm, and to my great astonishment the pulse registered seventy-six, full and strong. He pleasantly remarked "I am all right now," and insisted on getting up and dressing himself, which I, of course, objected to, but insisted on his remaining sick a little longer (at least until *I* could recover from the sudden shock). My patient had gotten well in one second without my assistance (unless his vomiting was caused by the heroic and nauseating draughts I had given him for altogether another purpose), while I had been trying for days to find relief for this distressing condition under which he had been living, nevertheless this was a revelation to me, and ever afterwards in subsequent attacks my treatment was simple and mostly mechan-

ical. I then ceased to look to the heart for the seat of trouble, but turned my attention to the digestive organs. On investigation I found that he was a very hearty and indiscreet eater, that he was the owner of a very large appetite and a dilated stomach, the appetite not being satisfied except when the stomach was filled. Means directed to the removal of the cause, as an emetic followed by a calomel purge in conjunction with a peculiar mechanical manipulation similar to Sylvester's method, which I will briefly describe, was usually sufficient to relieve the attack, though it was sometimes necessary to resort to the mechanism again and again until the purgative had had its effect. This I did as follows: I placed him across the bed on his back, with his head towards me, and grasped his arms near the elbows, bringing them up and fully extending them out beyond his head, at the same time requesting him to take a deep inspiration and hold it as long as possible, then with a quick motion bringing the arms down hard against the sides of his chest causing a quick and violent expiration. This procedure usually caused his pulse to suddenly drop from two hundred or more to seventy or seventy-six per minute. Finally he learned how to stop it himself by reaching up, catching the top of the door and swinging his weight by his hands, at the same time taking a deep inspiration, then suddenly dropping to the floor. Now he has many ways of his own invention by which he stops it at will, and seldom consults any one about his case. I have not been called to see him for over a year. He is otherwise in good health. The attacks come more frequently now than formerly, but do not last so long and do not interfere with his business. He says that often while at work his heart will get "out of fix," and he simply sits down and leans forward on his knees, taking a full inspiration and compressing his stomach with his hands, remaining in this position for twenty or thirty seconds, when the heart gives a heavy bound or two, then drops suddenly to normal. As to the true etiology I am uncertain. That it is reflex and that the stomach is the prime factor in its cause, I am certain, but the most perplexing question in my mind is, what are the physiological pro-

cesses leading up to, and through what nerve or set of nerves is this peculiar condition manifested?

The conclusion that seems most rational to me is that there must either be an irritation of the solar plexus, reflected through the sympathetic system to the ganglion of the cardiac plexus, thereby increasing cardiac action, or pressure from the dilated stomach on the solar plexus or some portion of the pneumogastric nerve, temporarily paralyzing its cardiac branches and suspending its inhibitory action. Which of these it is, I am unable to say. From the remarkable manner in which the attacks are relieved, I am inclined to believe that it is due to the latter (pressure and temporary paralysis of the pneumogastric), as mechanical methods seldom fail to relieve him, while medicinal treatment does very little good.

DISCUSSION.

DR. J. W. CARHART, Austin: I am very much pleased with this paper, and I believe its subject is almost as important as any that is apt to come before this body during our session. I would have been glad if the essayist had referred to the effect of tobacco on the heart, as producing the "tobacco heart," because that is a trouble we very frequently encounter, but the point is especially interesting to me from the fact of personal experience along that line. Some time since, when I began to take on a little more adipose tissue than I had carried, I had a peculiar disturbance of the heart. I first took valerian, and it had no effect whatever. I then took digitalis, strephonthes, strychnia, etc., without any beneficial effects. I became somewhat concerned, for I was becoming fleshier and heavier, although 70 years of age. Being a little alarmed, I went to San Antonio and requested my friend Dr. Langford to give me a thorough examination, which he did, and, to my surprise, said that I was the most remarkably preserved man he ever saw; that there was nothing the matter with my heart; that the trouble was with my stomach. Now I am inclined to think that these disturbances are more mechanical than reflex. I may be mistaken as to that, but I notice after a hearty meal if I bend over the disturbance takes place. Then if I sit up and take a full inspiration the trouble is all gone. I throw out that suggestion, because the heart is the source of some trouble to me, although I have ceased to worry about it and am growing stronger all the time. I am satisfied the trouble is of gastric origin, and I am inclined to the opinion it is more mechanical than reflex.

DR. DAVIDSON, closing: I would say just a word or two in answer to Dr. Carhart's suggestion that it might have been the use of tobacco that caused my patient's trouble. I would say that the patient was not a user of tobacco when he first had these attacks, being a small boy. Since then he has taken to smoking, but he says it has nothing whatever to do with the trouble with his heart. I had him quit using tobacco for a month or two, but these attacks would come on just the same. Sometimes he would be walking home from the store when he would have an attack, and he would sit down on the sidewalk and relieve himself. He told me that one night he had a date with his girl, and was in a hurry to close up the store and make the call. An attack came on while he was at the store. He did not have time to stop his heart then, so he hurried on home with his heart running about 250 a minute, took a bath and dressed himself, and then when he saw he had plenty of time he sat down and stopped his runaway heart and went on to see his girl. These attacks come on at any time, sometimes two or three times a day.

THE ADVANTAGES AND USE OF THE MICROSCOPE TO THE GENERAL PRACTITIONER IN DIAGNOSIS AND THERAPY.

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First. A correct diagnosis of morbid conditions and causes is essential to a rational and successful treatment of such conditions; and, second, microscopical examinations, carefully and intelligently made, are often essential to establish correct diagnoses of morbid conditions and causes.

If these declarations, simple and seemingly almost self-evident, were uniformly and intelligently accepted by the profession, there would, of course, be no place for this essay. The whole question would be settled; but, unfortunately, this is not the case. There are physicians who think they require no assistance other than their unaided five senses to diagnose all cases of disease, and regard microscopes and similar "new-fangled instruments" in a doctor's office as evidence of his medical incompetency. There is another class of physicians who also rely upon their unaided talents in diagnosis but who, at the same time, recognize the value of the microscope and test tube, but do not think them of sufficient importance to require a knowledge of their use. A third class (I wish it was a numerical third) of up-to-date doctors fully appreciate and practice exact methods of diagnosis.

No one has greater admiration than I have for the diagnostic skill, often marvelous in accuracy, and the therapeutic acumen of the old family physician. It affords a striking example how, by long practice, a person may acquire the art of seeing things to which the ordinary observer is blind and of properly interpreting their hidden significance. I often wonder whether the methods of Sherlock Holmes, as described in the series of remarkable

"Detective Stories" which bear his name, could have been conceived by a writer who had not been a family physician. But enlargement of the discerning and observing faculties by education, however valuable they are to the doctor, does not imply that he would not be a better doctor if he also possessed a working knowledge of exact methods in diagnosis. Besides, think of the years occupied in educating the senses and the many, many probable mistakes in diagnosis and associate remorses which may have occurred to the doctor during this time.

The usefulness of the microscope becomes evident when by its aid one is enabled to differentiate between diseases etiologically different but so nearly identical in symptomatology that mistakes in diagnosis are common. We will take for example the malarial fevers and the non-malarial diseases which possess a symptomatology almost identical with the former. The type of fever caused by the tertian parasite can usually be recognized by its clinical features alone, yet how often do we meet with non-malarial diseases characterized by paroxysms of chills, fever, and sweat, which may recur in periods as definite as those in tertian malarial fever. Such cases have doubtless been seen by many of the physicians in this room, and when such diseases fail to yield to quinin the doctor may not be able to find out, without the aid of the microscope, whether they are due to malaria, incipient phthisis, to infective cholangitis, or to lesions of the central nervous system.

Diagnostic mistakes and resulting errors in therapeutics are more common, and much more serious, in distinguishing between the estivo-autumnal form of malarial fever and typhoid fevers. The clinical features of the two diseases may be so nearly alike that one is constantly mistaken for the other, and medical authors have even described a supposed hybrid of both under the name of typho-malarial fever. When I say in all seriousness that I have heard physicians of large experience and established reputation assert that in many years of active practice in this State they have never seen (recognized) a case of typhoid fever, but have seen hundreds of cases of "slow fever," you will doubtless agree with me that an

intelligent use of the microscope would have radically changed their opinion of the etiology of these cases. I have observed that physicians who rely solely upon symptomatology for diagnosis do not fully appreciate the fact that diseases do not always conform in symptoms to text-book descriptions, but may vary their features, as they do their virulence, in different seasons and countries.

Since the finding of the parasites in the blood will definitely settle the diagnosis of malarial fever, and a positive Widal serum reaction, when made under proper precautions, is practically diagnostic of typhoid fever (to say nothing of the further evidence which may be obtained by separating the bacillus typhosus from the blood, feces, or urine, is not a doctor morally if not legally bound, in the interest of his patients, to use the microscope in differentiating these diseases? How often have many of us been embarrassed by inability to honestly answer the friends and relatives of the patient who say, "Doctor, what is the matter with the patient, is it typhoid fever or is it malarial fever?" Now, when the doctor is not sure of his diagnosis and is not willing to admit it, an inquiry of this sort is quite embarrassing, and he is very apt to seek refuge in that old lie, so oft repeated, it is malarial fever now, but it liable to run into typhoid fever when he knows, or should know, that malarial fever is not a whit more liable to run now, but is liable to run into typhoid fever when he knows, or How much more satisfactory to both doctor and patient it is to be able to say it is typhoid fever or it is malarial fever, as the disease may be.

Vigorous and proper treatment based upon an early and correct diagnosis is essential to the saving of human life in the pernicious forms of malarial fever; and, since the microscope is essential in making a diagnosis in some of these cases, its value again becomes apparent. The symptoms of comatose malaria and those of thermic fever may be, and usually are, identical, and both diseases are most often met with in the hot summer months. Prognosis here may depend upon diagnosis, and while hydrotherapy is necessary in both cases to reduce hyperpyrexia, comotose malaria demands in

addition the prompt use of quinin, which might prove harmful, certainly is not useful, in thermic fever.

The gastro-intestinal symptoms of pernicious malaria may be identical with those of cholera; in fact, a distinguished author, who had evidently been deceived by the similarity of symptoms in the two diseases, gravely announced that quinin is a specific remedy for cholera Asiatic, and, while a mistake in diagnosis between pernicious malaria and Asiatic cholera is less apt to occur in this country where cholera is seldom seen than in countries where both diseases are common, pernicious malaria is liable to be mistaken for cholera nostras, which is met with frequently in this latitude. A correct life-saving treatment in these cases must be based upon a correct diagnosis, which can be made most surely by microscopic methods.

No one knows the various, often dissimilar and insidious modes of onset of chronic ulcerative phthisis better than does the doctor, and none knows better than he the great value of an early recognition and treatment of these cases, and I, therefore, feel assured the attention of my audience while discussing them.

The early stages of chronic phthisis may be latent, and apical cavities may have formed with no general symptoms of importance; in other cases the early symptoms may be only those of dyspepsia and anemia. The symptoms of onset may be identical with those of tertian malarial fever, regularly recurring paroxysms of chill, fever, and sweat. The symptoms of onset may be those of chronic laryngitis, or, and more frequently, of diffuse bronchitis, or of pleurisy,—dry or with effusion,—or the initial symptom may be a pulmonary hemorrhage.

In view of the great prognostic value of early treatment, the prompt diagnosis of these cases becomes a matter of the utmost importance, and we all know that physical signs plus anamnesis do not always make the diagnosis; for example, it is a well-known clinical fact that disseminated force of tubercles may occupy the lung, or a part of it, and yet give no definite signs of consolidation that can be recognized by either percussion or auscultation. The

signs may be those of a compensating emphysema, and the diagnosis, as far as the physical signs go, must rest upon a hyperresonant percussion note and rales of a diffuse bronchitis. The Hippocratic axiom, "From a spitting of blood there is a spitting of pus," has long since been disproved, and it is now known that hemorrhages from the lungs may occur in association with many non-tuberculous disease. Hemoptysis has, therefore, lost the extreme prognostic significance it had at one time, but the frequency with which it is associated with beginning or advanced phthisis yet makes the recognition of its etiology, especially in a beginning phthisis, a matter of vital importance. While it is hardly probable that a pulmonary hemorrhage would precede anatomical changes in the lungs, even when it occurred as an initial symptom, it is not improbable that such changes may not be recognized by physical examination, and the specific nature of the disease may first be revealed by finding tubercle bacilli in the bronchial mucus discharged with the blood in a pulmonary hemorrhage.

But these two are not the only initial forms of phthisis in which the microscope is invaluable in diagnosis. The latent form in which apical cavities may have formed, and in which the sputum may contain both tubercle bacilli and elastic tissue before the occurrence of symptoms of sufficient importance to attract the patient's attention; the dyspeptic and anemic forms, in which the nature of the disease is so frequently overlooked; the laryngical form, often diagnosed as simple chronic laryngitis; the malarial form, where victims too frequently are deluged with quinin until the disease is far advanced; and the pleurisy forms, the true nature of which has only recently been recognized, afford other instances of initial phthisis in which the microscope may give valuable aid in diagnosis.

If a good microscope should cost double, triple, or quadruple the present price, and if its clinical usefulness was limited to the early detection of pulmonary phthisis, do you believe a physician should deprive his patients of its advantages, even though he saved but a single human life by its aid in his whole life's practice? As a money investment the doctor would be a loser in this partic-

ular instance, but think of his pay in moral satisfaction. Allow me to assure you, however, that the money expended in the purchase of a good clinical microscope and in acquiring a knowledge of its use is not a bad investment for a doctor to make. The instrument and acquired technic will repay the money invested over and over again, and if properly used will give to its possessor great scientific pleasure, and will bring to him the respect and confidence of his clients.

The clinical and scientific importance of a knowledge of the blood in normal and pathological conditions can alone furnish a theme. The scope of the subject is beyond the limits of a twenty-minute paper, and I can do no more than merely present some of the facts most important from a clinical view.

The diagnostic and prognostic value of an increased or a diminished leucocytosis in certain diseases or conditions of the body is universally recognized by clinicians as important. Typhoid fever, malarial fever, tuberculosis, influenza infection, and measles are normally characterized by a diminished or normal leucocytosis, and a condition of increased leucocytosis in typhoid fever, for example, indicates either an inflammatory complication — possibly a localized peritonitis and threatened perforation, or a mistake in diagnosis. A condition of increased leucocytosis in pneumonia indicates a favorable prognosis, and vice versa—typhoid (septic) conditions are associated with increased leucocytosis, and this feature is important in distinguishing such conditions from typhoid fever.

The causes which produce eosinophilia in diseases caused by animal parasites are very curious. Why the eosinophiles should be increased from 2 to 4 per cent in normal conditions to 20, 30, 40, or even 50 per cent in trichiniasis, for example, is very queer, but is an important clinical fact which occurs so constantly that diagnosis of trichiniasis made from microscopic examinations of the blood have been repeatedly confirmed by finding the parasites in the muscles.

That a positive diagnosis of lukemia can only be determined from a microscopical examination of the blood is well known.

The marvelous capacity of the blood serum and other body juices to a less degree in reacting in a definite and specific manner to foreign cells, cell products, and derivatives, following immunization produced by a prior introduction into the organisms of homologous cells, their products or derivatives, and of which science knew practically nothing until a few years ago, promises more for the advancement of scientific medicine than any other subject known. The well-known reaction between the blood serum of a typhoid immune and the bacillus typhosus constituting the "Widal reaction" is one of the several clinical methods of diagnosis which belong to this class of phenomena, while the anti-toxic treatment of diphtheria and tetanus, and the protective inoculations (vaccinations) against certain infectious diseases may be regarded as a few of the many therapeutic possibilities, due to specific reactions between homologous toxins and blood serum, which will be developed in time.

"The diagnosis of progressive pernicious anemia is to be made by an examination of the blood. The essential diagnostic feature is the presence of a large number of megaloblasts and the fact that these always exceed in number the normoblasts present."—Higley.

This appeal for the microscope as an aid in determining diseases is not made by a microscopical specialist, nor by a non-practical enthusiast, devoted to the pursuit of disappearing phantoms. The appeal is made especially to the general practitioner, the overworked, faithful conservator of public health, whose medical methods I would make more exact, and whose work I would make more valuable both to himself and his clients.

I am aware that a study of modern methods of exact diagnosis would for a time impose additional burdens upon the doctor, and in a measure would deprive him from the full enjoyment of deserved pleasures and recreations, but then the intellectual pleasure derived from the pursuit of knowledge would cause the period of study to pass rapidly while the benefits to come later would more than repay him for the time given.

A good working knowledge of clinical microscopy can be

acquired during the idle hours of the day or at night, if a few of the sleeping hours are sacrificed, with no other assistance than is furnished by a good clinical microscope, books on the microscope, and microscope technology and a willing, persevering mind.

The following plan of a self-taught course in clinical microscopy can be recommended from personal experiences. First become familiar with the microscope as an optical instrument, after which make a study of familiar objects, such as air bubbles, vegetable fibres, moulds, and other objects of simple nature, and a practical course in histology, and of the morphology of bacteria, may then conclude the course. It is a common experience that beginners must learn how to see with the microscope as well as what to see and what not to see. I recall with astonishment my early experiences in a self-taught course, and particularly remember my inability to see stained tubercle bacilli in a mounted section of tuberculosis of the liver. I examined the specimen hours at a time for several days and saw everything to be seen except the bacilli. Finally one day the stained bacilli suddenly appeared to my vision as distinctly as the fingers of my hand and I have yet to understand why I did not see them earlier.

The medical college curriculum and plan of instruction of the present day when compared with the college course of a few years ago affords a strong endorsement of exact methods in diagnosis.

DISCUSSION.

DR. BLAILOCK, Dallas: I enjoyed Dr. McLaughlin's paper very much, because I think it is in the right direction. I believe the man who has not the time to study medicine should not have the privilege to practice it. Now the microscope is certainly one of the most valuable agencies we have in making diagnosis. Diagnosis is certainly as important, and often more important, than treatment. If we do not know what kind of disease we are dealing with, oftentimes we can not devise remedies to relieve it. I think every doctor should own a microscope, but I think some doctors make the mistake of buying instruments that are too costly, instruments that they can not learn to use without making specialists of themselves. Now a good working microscope can be bought for $100. I will state a case in which I detected tuberculosis only after repeated examinations with the micro-

scope. A young German came to my office. He was a married man. He contemplated going into business. He told me to examine him and tell him if he had tuberculosis. He suspected it. I got a sample of his sputum. It was of a whitish color, did not have that greenish tint that tuberculosis sputum usually has. I made from fifteen to twenty examinations, in each of them I found nothing. I persisted, and about the twentieth slide I examined I found three or four tubercle bacilli. I told the young man that he had tuberculosis. He consulted other doctors and some told him he did not have tuberculosis. But he took my advice and did not go into business, and about three months afterwards on examination of his sputum I found hundreds of bacilli, and a short time afterward he was in his grave.

DR. HOMER HILL, Austin: I want to express my appreciation of the doctor's plea for the increased use of the microscope, and I am sure that the man who uses the microscope appreciates it the most. Like the doctor, I studied the microscope a long time in my own office, and so appreciated its value that when I took post-graduate work I paid more attention to microscopic study than to everything else combined.

DR. SHROPSHIRE, Yoakum: If the Section will pardon me for so doing, I will leave the chair long enough to make a few remarks on this most important subject. The use of the microscope is so essential to every really scientific physician of today that, though it were ten times as hard to acquire as it is, none would be justifiable in dispensing with it. In reality it is not hard to acquire a fair working knowledge of the instrument, nor is it now very difficult to acquire a sufficient knowledge of bacteriology to be able to use the microscope in all conditions where it is absolutely necessary as a means of diagnosis; for under our organization each county society may place that knowledge within the reach of every cross-road doctor; as has been done in our county society, where the malarial plasmodia has been demonstrated in both the stained and living condition. The tubercle bacillus, the streptococci, staphylococci, and the typhoid bacillus in Widal's reaction have all been demonstrated. There is no excuse for any physician in the county not knowing the essentials of microscopy and bacteriology so far as the needs of the general practitioner are concerned. So that the matter resolves itself into a little expense and diligence. To emphasize the advantages of its use, I will tell of a recent experience: A patient came to me from Fort Worth, where she had had a diagnosis of "galloping consumption" or acute tuberculosis. Had commenced with attack of influenza in October, fever continued but grew less after few weeks and cough continued, when she had a relapse, and had several repetitions of relapses as she thought; her cough and expectoration increased till, when I first saw her, she expectorated a half pint each morn-

ing just after waking and her temperature ranged from 38 to 39. Physical examination disclosed quite a cavity under the right fourth and fifth ribs, with all the symptoms of a cavity in a tuberculous patient. I had not the remotest doubt of its being a case of tuberculosis with a large cavity, but, because I wanted some good specimens of the bacillus, and desired to know whether the streptococci were present, I took some sputum to my office and examined it; and, though I made not less than ten or fifteen stains and examined them, I did not find a tubercle bacillus. Instead I found numerous streptococci and some of the diplococci of pneumonia, and had to abandon my diagnosis of phthisis for that of broncho-pneumonia upon which had been implanted a streptococcic infection and resorted to the use of the antistreptococcic serum, under which within five days the streptococci disappeared from the sputum and the diplococci in about ten days, and the patient made a perfect recovery in about eight weeks. Today she is a well woman, while without the use of the microscope I would have treated her for tuberculosis and sent her to the grave. This was one of many cases where the use of the microscope saved the patient's life.

PNEUMONIA IN OUR PENAL INSTITUTIONS.

W. F. FOWLER, M. D., HUNTSVILLE.

I hope by comparing statistics from some of our leading hospitals and information collected from various sources to show the influence of prison life on pneumonia. After searching medical literature at my command, I found little written directly on pneumonia in our penal institutions, so I sent letters to prisons located in various parts of the United States asking for the daily population of the prisons and all the available statistics on pneumonia treated in the prison hospitals, but they have furnished very little data upon which a correct opinion could be based. The Clinton prison, New York, gives a total of twelve cases since 1894 with two deaths, a mortality of 16 per cent. The Ohio State penitentiary gives a mortality ranging from 10 to 50 per cent, stating that an average would reach 40 per cent. The Missouri State prison furnishes a total of thirteen cases with six deaths, a mortality of 46 per cent. The Kansas State prison for a period of twelve years had fourteen cases with six deaths, a mortality of 42 per cent. One of the most remarkable epidemics of pneumonia in prisons was reported by W. B. Rodman, of Frankfort, Kentucky. In one year there occurred in a prison population of 735, 118 cases with twenty-five deaths, a mortality of 21 per cent. The prison was much overcrowded at the time. Similar epidemics have been reported in Europe. At the penitentiary located at Amberg, from the first of January to the first of June, there were 161 cases of pneumonia with a mortality of over 28 per cent. I have prepared a tabulated report from the Texas penitentiaries, thinking perhaps it might be of some interest to give the number of cases and the death rate each year. This report covers a period of twenty-five years at the Huntsville prison and eleven years at the Rusk prison,

and a report from the outside forces for the same period; commencing with the Huntsville prison as follows:

Huntsville Prison Hospital				Rusk Prison Hospital.				Outside Force Hospitals.			
Year.	Cases.	Deaths.	Per Cent.	Year.	Cases.	Deaths.	Per Cent.	Year.	Cases.	Deaths.	Per Cent.
1878-9	19	3	15	1893	7	4	56	1893	18	1	5
1880-1	14	3	21	1894	5	1	20	1894	63	3	4
1882-3	18	3	16	1895	22	.....	.....	1895	76	10	13
1884-5	24	2	8	1896	5	.....	.....	1896	81	15	18
1886-7	23	3	13	1897	5	.....	.....	1897	56	5	8
1888-9	6	.....	.....	1898	5	.....	.....	1898	47	9	19
1890-1	5	.....	.....	1899	8	.....	.....	1899	74	11	14
1892-3	14	4	28	1900	4	.....	.....	1900	54	15	27
1894-5	10	3	30	1901	4	.....	.....	1901	92	11	11
1896-7	12	4	33	1902	5	.....	.....	1902	83	6	7
1898-9	7	2	28	1903	4	.....	.....	1903	48	10	20
1900-1	9	4	44	1904	27	3	11				
1902	1	1	100								
Totals	164	32	19		108	8	7		682	96	13

A total of 964 cases with 136 deaths, an average mortality of 14 per cent.

The entire prison population for the decade just passed will reach an average daily population of 4240, and about 550 of this number are kept in the Huntsville prison and about 650 are confined in the Rusk prison. The rest of them are located on farms and railroads in various parts of the State. I think the statistics from the Texas prison will compare favorably with statistics from our best hospitals at home and in other countries on pneumonia. From various statistical reports of consecutive years the death rate of pneumonia varies widely from year to year. In 1875 the mortality from pneumonia at the London Hospital was 24 per cent; in the year following it was 39 per cent. At the Westminster Hospital the death rate varies from 10 to 23 per cent. The Montreal General Hospital furnishes statistics since 1853 with the following results: In the decade of 1853-63, a mortality of 16 per cent; in 1863-73, 16 per cent; decade ending with 1883-87, 23 per cent; a total of 1012 cases with 206 deaths, equal

to 20 per cent. The statistics from the Charity Hospital, New Orleans, from 1830 to 1880, show the death rate has been respectively as follows: 46 per cent, 35 per cent, 32 per cent, 43 per cent, and 40 per cent. In a total of 3969 cases there were 1509 deaths, a percentage of 38. Of 223,730 cases collected by Wells from various sources 40,276 died, a mortality of 18 per cent.

All recent observers give a mortality in pneumonia ranging from 20 to 40 per cent in hospital, and 16 to 20 per cent in private practice. I believe the most malignant types of pneumonia prevail in the "house epidemics." I have experienced two such epidemics in my own practice. In 1892 I saw five members of one family attacked with pneumonia in less than ten days with two deaths, a mortality of 40 per cent. In February, 1904, I saw six cases in a family of negroes with three deaths, a mortality of 50 per cent. Previous to this time I had treated sixteen cases since 1900 without a death.

It is an established fact that age, intemperate living, bad sanitary conditions and previous disease contribute to the fatality of pneumonia. The death rate progressively increases after the tenth year, rising to 22 per cent in the third decade; in the fourth 47 per cent; in the fifth 51 per cent; in the sixth 65 per cent and in the seventh decade 70 per cent. The population of prisons is composed largely of men who have reached the third, fourth, fifth and sixth decade, while some are over seventy years of age. A large per cent of them have lived very intemperate lives, and quite a number of them have chronic diseases when received in prison. such as tuberculosis, tertiary syphilis, nephritis, diabetes and many other constitutional diseases. These facts with overcrowding and bad sanitary conditions in some prisons furnish fruitful fields for the production of pneumonia with a high mortality. If prisons are not overcrowded and have ample ventilation, with a proper amount of exposure to the sunshine, and the surroundings are kept in a thorough sanitary state, with strict attention to the care and management of the inmates, I fail to see any reason why pneumonia should be more prevalent and more fatal in prisons than it

is in cities and rural districts. I believe the low death rate in the Texas prisons from pneumonia can be attributed to superior management and good sanitary measures. In my opinion our great Lone Star State has the honor of having the best system for managing, working and caring for the prisoners of any State in the Union.

In conclusion I will say that the treatment given for pneumonia at the Texas prison hospitals is in line with the treatment advocated by our most eminent writers of recent years. It has been claimed by some observers that there has been a steady increase in the death rate from pneumonia since the middle of the nineteenth century, and some are inclined to put the blame on the treatment for pneumonia of late years, which I can not accept. I believe that for sustaining the vital powers of our patients while battling against the poisonous toxemia produced by pneumonia, and to enable them to pass over the crisis, the treatment of today is more rational and efficient than it has been at any time in the history of medicine.

THE USE OF ANTI-STREPTOCOCCIC SERUM IN THE TREATMENT OF MIXED INFECTION OF TUBERCULOSIS AND STREPTOCOCCI.

OTTO EHLINGER, M. D., LA GRANGE.

No one infection of the human organism exhibits such a varied clinical history and course as pulmonary tuberculosis, but it is now generally accepted that all varieties are due to the active presence of the bacillus tuberculosis, which was discovered by Koch in 1880.

Chronic pneumonic tuberculosis is the form of the disease which constitutes the great majority of cases of pulmonary tuberculosis, and while the lesions are primarily tuberculosis in nearly all cases, it ultimately becomes a mixed infection. The best known and most troublesome features of the disease are due to the secondary infection with pyogenic organisms, streptococci and staphylococci.

Marked changes may have occurred in the lung before any symptoms of tuberculosis develop. The patient complains about being susceptible to colds, or has catarrh and cough, the latter often is not noticed, often having fever which is irregular or similating malaria. The same insidious invasion accompanied by symptoms of anemia, gastric disturbances and night sweats should be considered with suspicion.

Cough, which is one of the earliest symptoms, though not always noticed, varies greatly in character and consistency. It may be dry and hacking at first with some glary mucus, later it is loose with muco-purulent expectoration. If softening occurred, the sputum may be yellow or greenish and contains flattened masses or numular sputum. This kind usually comes from cavities and it may become paroxysmal, followed by vomiting. It is usually heavy and sinks in water.

Respiration is usually increased in proportion to the amount of

lung tissue involved, it may be from twenty-six to forty per minute. Dsypnea is not common until late in the disease or where sclerosis exists or a weak heart.

Fever is almost constant, but there are apyrexial periods and temperature may be below normal. Every variety of range is exhibited. Whatever type the temperature may exhibit it may maintain this type for weeks and months, if there is no disturbing element. A sudden and maintained elevation of 102-3 is indicative of a new field of invasion. The cases exhibiting the most irregular and fluctuating temperatures are those in which secondary infection exists. Stern, Erbman, Maraglino and others believe hectic fever is due to secondary infection, and not to tubercular infection. The pulse is very variable and there is no reliable relation between the pulse fever and respiration. Nervous influences affect the pulse greatly. It is rapid with considerable fever or extension of the disease and affected greatly by the patient's strength. Pleurisy is very common. Hemoptysis is present in 60 to 80 per cent and may be an early symptom. Night sweats which disturb rest and are very weakening seem to be due principally to the pyogenic infection.

The lesions of this variety of tuberculosis show great variation and difference in distribution. Broncho-pneumonia, miliary tubercles, disseminated either by the air passages or vessels, sclerosis, caseation, softening and cavity formation are the chief changes. During the period of liquifaction and formation of cavities the pyogenic organisms play an important part and no doubt the cavity formation is greatly favored by this secondary infection. We now deal with, essentially, a case of septicemia.

I believe we have a specific remedy in anti-streptococcic serum which will modify the course of this process, which will be illustrated by the following case:

J. S., bookkeeper, age 20, height 6 feet 2 inches, weight 107 pounds, chest at the fourth rib 31 inches, abdomen 28 inches, general appearance pale, loose, dry skin, blue veins, flushed cheeks, pearly conjunctiva and pale membranes known as "con-

sumptive looking." He was subject to catarrh and colds. In May, 1901, he contracted a severe tonsilitis. This was followed by fever which would come on at 9 a. m. and last four to six hours, diagnosed malaria and treated for same without improvement. This continued until September, 1901, when cough increased and he had a slight hemorrhage. He went to Comstock and at this time weighed 117 pounds, which was eighteen pounds below his normal weight. He remained two months and returned in perfect health, weighing 142 pounds, no cough, fever or night sweats. He resumed his occupation as bookkeeper, but in May his health began to fail, cough returned, and fever soon followed. He again went west and remained about a year and returned to La Grange, Texas, still having chills and fever, cough and night sweats. He remained here a short time, but found he was gradually getting worse. He again went to Comstock and remained there until December 8, 1903. He returned home weighing 107 pounds, with chills and fever reaching 104 degrees, pulse 130 to 140, respiration 28 to 40, night sweats, cough and spitting a pint or more of thick yellow substance at night. He was confined to his bed for several weeks and could not sleep for cough and night sweats. He had no appetite and forced feeding always caused vomiting. He gave up all hope and refused to be treated any more.

I had a specimen of his sputum examined with a report that tubercular bacilli with many streptococci and staphylococci were found. On January 14, 1904, I gave him 20 c. c. of anti-streptococcic serum, and gave him 10 c. c. every day thereafter until 180 c. c. were injected. After taking 50 c. c. fever came two hours later and was from one to two degrees lower. After 70 c. c. were injected, chills disappeared and he had no night sweats. He began to eat more, gained three pounds in weight, was not disturbed much by cough at night and slept well. Nettle rash appeared where injections were given and gradually spread over the body. This was continued for four days and finally disappeared. Sputum was examined with report that tubercle baccilli and very few streptococci or staphylococci were found. After 120 c. c.

were given cough decreased, sputum diminished and was nearly clear, his fever lasted two to three hours a day and rarely went above 102 degrees. He eat well and slept all night without being disturbed by cough or night sweats. After 140 c. c. were given his feet and ankles swelled and rheumatic pains in most of the joints were noticed, and later the wrists and ankles became swollen, red and painful.

Examination of the sputum was reported with very few tubercular bacilli and no streptococci or staphylococci found. His weight was now 114 pounds. I gave him four more injections, making in all 180 c. c. I discontinued the injections because he was reported clear of streptococci, and during the last injection his face and eyes became very red, and his breathing became rapid and short, but in a few minutes this disappeared. In the latter part of February he contracted lagrippe and had some fever and cough. The sputum again increased and became yellow, but he gradually improved. The sputum cleared. Slight fever continued. No streptococci were found. About April 1st his weight was 118 pounds and his general condition very much improved. He still has fever now and then, but not regular as before the treatment.

I considered this case hopeless, but the improvement was very positive, and I believe anti-streptococcic serum to be of great value in all mixed infections of tuberculosis and streptococci.

THE CONVEYANCE OF YELLOW FEVER.

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I wish in this paper to announce what I consider the true doctrine of the propagation of yellow fever, and to give briefly the reasons. The "creed," so to speak of the doctrine, is briefly as follows: (1) *Yellow fever is conveyed from the sick to the well by a mosquito host, the stegomyia fasciata, contaminated by feeding on the sick man;* and, (2) *In nature it is only thus conveyed.*

I am sure you will accept the first statement that yellow fever *is* thus conveyable. It is a positive proposition, and admits of positive evidence. That evidence is satisfactory and abundant. The American Commission, of which Reed was chairman, reported, first and last, twelve cases thus conveyed; Reed and Carroll, two; Guiteras, eight cases; Parker, Porthier, and Boyer at Vera Cruz, one case; the second party at Vera Cruz, one case; the Pasteur Institute Commission at Petropolis, four cases. Ribas and his confreres at Rio Janeiro also reported successful experiments, but I have not seen their report, and I do not know how many cases. Indeed, all who have tried to convey yellow fever in this manner have succeeded.

Note, please, the conditions under which this conveyance occurred in the experiments cited: (a) A particular kind of mosquito was used—stegomyia fasciata. (b) It bit a patient in the first three days of yellow fever. (c) It was kept a considerable period—twelve days the shortest time—and then bit the well man.

After once acquiring the power of conveying yellow fever, for which a certain time after biting the sick man is necessary, the mosquito seems to retain the power indefinitely; at least one of Reed's conveyed yellow fever fifty-nine days after feeding on a yellow fever patient. Given the above conditions, yellow fever

was produced with reasonable constancy. A few men, very few, were found to be immune from this method of conveyance. Not every mosquito bite conveyed yellow fever even to those who subsequently succumbed to mosquito bites.

1. *The Kind of Mosquito.*—So far only the stegomyia fasciata has been experimented with. It seems idle, then, to speculate if some other genus or species of mosquito will not act as hosts. Analogy would lead us to expect that some other species of stegomyia would do so, but that no mosquito not of this genus would. The genus, and the species of it, is widely distributed in hot countries. Obviously we can exclude such species as are found in places where yellow fever does not spread when introduced. If yellow fever is conveyed by only one genus or species of mosquitoes, then it is conveyable only where and when that particular mosquito is found and is active. Arguments concerning its conveyance drawn from the habits of *other* mosquitoes are valuable unless these habits are common also to the stegomyia, whose habits are in many respects different from those of other mosquitoes. The presence of mosquitoes in a place in no wise implies that yellow fever can be propagated there, unless they are stegomyiæ. I was asked, "How can you say that a vessel a few hundred yards off shore is safe from the invasion of infected mosquitoes, when you say that you have seen swarms of mosquitoes come aboard a mile out at sea?" I answered, "the infected mosquitoes" are stegomyiæ and those that boarded me off shore were the "salt water" mosquito—a culex, a different insect altogether. A physician asked, "If mosquitoes conveyed yellow fever, how could one explain that a certain hospital where yellow fever was treated remained disinfected when close to a marsh and swarming with mosquitoes?" I answered, there was no evidence to show that they were stegomyiæ. Indeed, this variety is not generally found in marshes.

2. *The Time Limit.*—In all the experiments the patient was bitten in the first three days of yellow fever. Is this the limit of time during which he can infect the mosquito? The only experiments on this matter are those of the Pasteur Institute Commis-

sion. They injected blood from three cases of yellow fever, each one in the fourth day of the disease, into three subjects; it having been found that the disease was conveyed quite certainly by this method. None of them developed yellow fever. One of them only was shown to be susceptible to yellow fever subsequently by being bitten by an infected mosquito. This commission concludes from this that the power of the patients to produce infection lasts only three days. This seems to me too absolute a conclusion for the number of observations made. Unquestionably the blood of these patients did not convey yellow fever, but I would prefer to see more experiments on this matter before I regard it as settled. It is a very important one for the sanitarian; important because we wish to isolate the patient *only* while infective, and, if three days is the limit, we will not isolate him longer, not only for his sake, but for our own. My experience has been, and I think all health officers will confirm me, that restrictive measures of sanitation, especially if domiciliary, are hard enough to carry out any way. That the less one requires, provided it be all that is necessary, the better the work will be done. The enforcement of unnecessary measures is generally at the expense of some essential. As of old, the tithing of Mint, Amise, and Cummin leads to the neglect of the weightier matters of the law.

3. *The Incubation Period.*—How long must the mosquito wait after biting the yellow fever patient before it can communicate yellow fever? That is, how long does it take for the *infected* mosquito to become *infective*? Before Reed's work in Cuba, I had determined the existence of a period of time that must elapse after the development of a case of yellow fever in an uninfected place before that place became infective. During this time yellow fever could not be contracted in the place. This period, the length of which I could only approximately determine, I had called the "EXTRINSIC INCUBATION" of yellow fever. I did not know its explanation, yet the knowledge of the fact was of great service to me in epidemic work. It was, of course, the time that it takes for the mosquito after biting the sick man to become infective. This time

depends on the temperature, as do all of the processes of and in the mosquito, being longer in low temperature. The shortest time in which this power of conveying infection has been manifested in the experimental cases was twelve days. It was usually decidedly longer than this in Reed's experiments, most of which were in the winter. The twelve-day case was in August. It seems to be accepted that twelve days is the shortest time in which an infected mosquito can become infective, and this agrees with my own crude determination of the minimum period of extrinsic incubation—"somewhat over ten days"—and yet I can not think that this has been *experimentally proven*. Not enough attempts have been made during hot weather with mosquitoes infected for less than twelve days. The determination of the minimum of this period is of interest, but not of great importance.

We have not found the micro-organism of yellow fever, although it has been assiduously searched for both in human blood known to contain it and in the mosquito, yet some direct observations have been made on it. In the blood, at least, it exists in an ultramicroscopical form, as was shown first by Carroll working on lines laid out by Reed and himself. He found that blood serum filtered through a Berkenfeld filter would still produce the disease. This was confirmed by the Pasteur Institute Commission, and, in my opinion, by the working party at Vera Cruz. The Pasteur Institute Commission found that serum passed through a Chamberland bougie B would convey infection, while that passed through a bougie F would not, thus determining within limits the size of the smallest of the infective germs. I say "the smallest infective germs" advisedly, because they *may* exist in the blood in different forms—as the plasmodium malariæ often does—and only the smallest ones pass the bougie B. The direct injections of blood and serum, filtered and otherwise, seem to differ from mosquito inoculations in normal individuals, of which the period of inoculation was accurately recorded, the shortest was two hours short of three days, and the longest two hours over six days, and all save these were between three and six days. With this agrees my own

observation of the periods of incubation of twelve cases of yellow fever, naturally contracted, each with a single short exposure, all of which gave incubations of from three to six days. In the fourteen cases of blood and serum injections, the time varied from one day and twenty hours to twelve days and eighteen hours, three of the cases being eight days and five hours, nine and one-half days, and twelve and three-quarter days. Whether there is a real difference, or whether these mosquito inoculations and my observations *happened* to have no very long or very short periods of incubation, I can not say. As we have thirty-six of these cases recorded, and this is the natural way of conveying the fever, I would rather base my sanitary measures on them than on the results of direct injection of blood.

The organism is very easily killed. Blood heated to 55 degrees C. for five minutes is no longer infective, and it soon dies in blood exposed to the air, although blood five days old covered by oil of vaseline is infective.

The second part of my "creed" is different in its very nature. It is a *negative* proposition. To say that yellow fever is only conveyed by a mosquito host is saying that it is not conveyed in any one of the many other ways which might be claimed as the true one; and to proceed logically one should examine the evidence advanced for every such way of conveyance and demonstrate its futility. There are two reasons why I do not do this: (1) because it would be almost unending; and (2) because, as I do not believe it is conveyed in any other way, I might not state the arguments for the affirmative fairly. Yet I will give a few reasons why we should accept the conveyance by a stegomyia host as the only means by which it is *naturally conveyed.* I say "naturally conveyed," meaning the way yellow fever is contracted naturally as during epidemics. The disease can be conveyed without the mediation of a host by the hypodermatic injection of the blood of the patient, but that surely is not a natural conveyance.

1. *Analogy.*—Of such diseases as have been fully investigated,

all that are conveyed by living hosts are conveyed naturally in no other way. This is a biological law.

Familiar illustrations are malarial fevers and Texas cattle fever, which latter is very like yellow fever in its epidemiology. There are a number of diseases of the lower animals thus conveyed, and for all this law holds.

2. *Facts.*—The facts observed of the natural propagation of yellow fever agree with this theory and are explained by it. Thus, (a) the fact that the disease is not directly propagated from the sick to the well; that it is propagated only by means of an infected environment. (b) That a man sick of yellow fever may infect his environment. By our theory, he infects the mosquitoes which bite him, and the presence of these infected mosquitoes constitute the infected invironment. (c) The existence of infectible and noninfectible places. An "infectible" place, as you know, is one which, if cases of yellow fever be introduced therein, becomes infected; i. e., capable of inducing yellow fever in those who visit and live there. A "non-infectible" place is one which will not become infected even if cases of yellow fever be introduced. In such a place yellow fever is not a transmissible disease. The theory of conveyance by a host would explain the difference by the presence of the proper host (stegomyia fasciata) in the one case and its absence in the other. (d) The relation of the spread of yellow fever to cold weather, altitude, and excessive dryness. The very conditions under which this mosquito (mind you I do not say "mosquitoes") thrives best suit the propagation of yellow fever. (e) The close correspondence of the periods of incubation after infection in the natural way—twelve cases observed by myself, with the period of incubation after mosquito inoculation—twenty-four cases. Yellow fever caused by the hypodermatic injection of blood or strained serum from a yellow fever patient has not shown the same agreement in its period of incubation with that naturally contracted. This is not a natural method of conveyance. (f) The existence of a considerable interval, seldom under two to two and one-half weeks, between the "infecting" and the first "secondary"

cases of yellow fever. I mean that, when a case of yellow fever contracted elsewhere develops in a noninfected place, no case will develop from the first one until after *about* two weeks, and that then we are apt to have a considerable number together as our first crop. Now this time is decidedly longer than the period of incubation of yellow fever, and, since it is an invariable phenomenon, it can only mean that the place requires a certain time after receiving infection from the sick man before it becomes capable of inducing yellow fever in others. This, of course, is the "Extrinsic incubation" we have spoken of before, and its minimum duration which had been fixed by observation of yellow fever naturally occurring as "somewhat in excess of ten days," "the first secondary cases usually occurring in the third week," is too close to the period—twelve days as a minimum—which Reed observed between the date of feeding the mosquito on yellow fever patient and the date at which yellow fever was conveyable by the same insect for those periods to be due to different causes. That cause in Reed's cases was the incubation in the mosquito. The same phenomenon is observed with the plasmodium malariæ and anopheles and with all other pathogenic parasites conveyed by living hosts. The cause in natural conveyance should not be different. This phenomenon and the fact that some places are infectible and some not infectible by a yellow fever patient, with no reason which we could assign for the difference, are, taken together, scarcely capable of any other explanation than conveyance by a host. *I do not know one single fact established concerning the natural propagation of yellow fever which does not agree with the doctrine of its conveyance by the stegomyia fasciata as a host.*

3. Measures founded on this doctrine have given the results which were to be expected of them if it were true. And this I hold is the most convincing evidence. In 1899 and 1900 "campaigns of cleanliness" were waged against yellow fever in Havana. All the money that could be called for was forthcoming and all the men. Skilled engineers were in charge with the whole force of the military power behind them. In 1899 General Ludlow was in com-

mand and Major Davis was chief sanitary officer. In 1900 it was General Wood and Major Gorgas. And I can give you my word that the work was well done. Havana was as clean as a cobblestone paved city can be kept.

We began with a city almost free from yellow fever. There had been but thirty-one deaths from yellow fever among civilians the year ending March 31, 1899, and there were only five more to August 1st. The fever then spread, and we had that year to March 31, 1900, 111 deaths among the civil population. Less than normal, but just the number as in 1885 when no sanitary measures were used. In 1900 the work was probably better organized and was certainly as well done, yet the deaths that year were 301, although this includes some among the military—say twelve or fifteen. The average civil death rate from yellow fever in Havana for the ten years prior to the war was 211—a little less. We have then this year more deaths among the civil population than normal in Spanish times, nearly one-third more. Indeed, 1900, after all our work, gave a *higher civilian mortality than any of the ten years prior to the war except 1898.* During all this time Havana was as clean as we could make it. Patients were isolated to some extent; all moved to hospitals whom we could get to go—probably 75 per cent—and the premises carefully washed down with bichloride of mercury and the fabrics disinfected by steam of bichloride or boiling.

So far as yellow fever was concerned the sanitary wash was a failure. The next year the plan was changed. The stegomyia was accepted as the only means of conveying yellow fever and all effort was based on this belief. All cases of yellow fever were screened as soon as found (and they were found easily), and the screens were kept in place, too. If the patient went to hospital, the house was immediately fumigated with either pyrethrum or sulphur. If he did not, it was screened and fumigated as soon as possible. The houses adjacent were also fumigated. The key to the plan was: (1) to keep the mosquitoes from the patient; and (2) to kill all mosquitoes which had had access to him. There was, also, a gen-

eral war waged against all mosquitoes in town, draining and oiling pools of water; emptying, covering, or oiling water in containers. The presence of mosquito larvæ on premises was made a public nuisance and punished by fine. These measures unquestionably did good, and there was certainly a tremendous fall in the mortality in all malarial fever, but the essential of the work for yellow fever was, as I have said, *to keep mosquitoes from the patient and to kill those which had had access to him.* Nothing else was done. The bedding and clothing of the sick was not touched, nor the bedding and clothing in the houses where they were taken sick.

The result was yellow fever disappeared. There were about the usual crop of cases in the spring, but there was no spread. Some were introduced from Santiago de la Vega, a little place outside of Havana, where there was quite a little epidemic, but there was no spread to amount to anything. Cases (a few) were brought on the vessels from Vera Cruz, taken to the yellow fever hospital and screened, and there was no spread. This was not luck nor accident. *Havana had had yellow fever for 140 years. It was freed from it in the summer of 1901 by the measures described.*

I am glad that the same man, Dr. Gorgas, had charge of the sanitary work in both 1900 and 1901, so that everything should be the same except the plans of the work and the difference in the results—in 1900 a signal failure, in 1901 a brilliant success. Could this have happened had there been any other means of conveying yellow fever except the insect host? What else will screens exclude? What else will insect powder kill? There has been no yellow fever in Havana since; that is, none contracted there. You know that Havana is in weekly communication with Vera Cruz and other Mexican ports, receiving a considerable number of passengers by each vessel. How has she kept infection from being introduced from these ports? There is a maratime quarantine at Havana just as at all seaports among civilized nations. As Dr. Finlay directs it, for yellow fever, it is naturally based on the stegomyia being the only agent of conveyance of that disease

to man. Passengers not immune to yellow fever are retained in quarantine across the bay five days from their last presumable exposure to yellow fever before they are allowed to enter the city. Vessels which may be infected with yellow fever (i. e. which may have infected stegomyia on board) are not allowed at the wharves or to be boarded by non-immunes until after fumigation to destroy mosquitoes. Baggage of all kinds, from Vera Cruz, Tampico, and Merida, even that of people sick with yellow fever, is passed without disinfection. People arriving with yellow fever are taken at once in an ambulance screened with mosquito wire to the yellow fever hospital. This is a ward screened and with double screen doors in the general hospital in the city of Havana. A number of such cases have been thus treated, and there has been no spread. No spread was expected by those in charge, and I venture to promise that there will be no spread as long as the present system is carried out.

The same regulation has been in effect in a number of our ports, those of Virginia, North Carolina, Georgia, Florida, and Mississippi, the past year; for the United States regulations are also based absolutely on this doctrine, and require only what is given above, and with the same result. Could this be if yellow fever were conveyed in any way except by an insect host? Could it be if fomites could convey yellow fever?

If yellow fever can be conveyed by fomites, the doctrine that it is only conveyed naturally by a mosquito host is untrue. I believed it, the conveyance by fomites, (1) from the analogy with other infectious diseases, smallpox, measles, etc.; and (2) because everyone else did. The doctrine was not disputed, and I did not examine the evidence for it critically. Yet, even before Reed's first paper, I had come to rather more than doubt—indeed, to disbelieve—that *fabrics* conveyed yellow fever, although I knew that ships did. My mind was not changed simply to accept his theory. In the first place, for all the yellow fever outbreaks which I myself could trace a man sick of yellow fever was the starting point. There were many which I could not trace. In some such outbreaks fabrics

from infected places had come in, but in the vast majority no such fabric could be traced. None of the reported cases of conveyance by baggage which I could personally investigate excluded other means of conveyance. Then I found that for the twenty years preceding 1899 the baggage from Vera Cruz, Havana, and Santiago de Cuba on vessels arriving at New York, unless with yellow fever en route, entered without disinfection. The amount of this baggage from Havana and Vera Cruz was large, and it was not possible but that much of it came from houses infected with yellow fever, and much of it was not clean. All of this baggage was presumably opened at the custom house at New York, and it was opened in hotels there and at Saratoga, and no yellow fever was reported among the custom inspectors in New York or at the hotels during this time.

The baggage going from the same ports to Spain for the thirty years preceding 1900 was even more to be considered. Its amount was enormous. Much of it must have been foul. Yet no yellow fever was reported in the peninsula since the epidemic in 1870. Negative evidence is convincing only in proportion to its mass, and that a piece of baggage, or one hundred pieces of baggage, from an infected place did not convey infection to those exposed to it means little, yet the amount of this baggage was so large—I can not estimate it at less than that of 300,000 persons from Havana alone, not to count Vera Cruz and Southern Cuba—that we must claim that a very large amount of baggage from infected houses had been introduced into New York and Spanish towns; that numbers of susceptible people had there been exposed under various conditions, but had *not* contracted yellow fever. To me the mass of this evidence was sufficient to be convincing, and I counted it *proven* that baggage from Havana and Vera Cruz would not convey yellow fever to people in New York or Spain, nor could I say it will do so in the South. We know that yellow fever is communicable from a sick man only indirectly by infecting his environment and, hence, only in an "infectible locality." That infection can be *directly* conveyed to man by fomites is the doctrine

which had been universally taught. All the instances reported of conveyance by fabrics of which I have cognizance are either explicitly ascribed to, or are explicable by, this *direct* conveyance. Now, if the "infected" fabrics can convey yellow fever directly to men, obviously they will convey it to susceptible people who come in direct contact with them in any place whether the locality be "infectible" or "non-infectible." Therefore, as against the possibility of direct conveyance of yellow fever from fabrics to men, the data from New York and Spain which I have given above if conclusive for those places are conclusive against such conveyance in places known to be "habitually infectible." As to the positive instances of conveyance by baggage, which had been reported, none that I had been able to inquire into personally certainly excluded other methods of conveyance. The reporter begins (as I did) with the assumption that yellow fever is conveyed by fomites, and, as soon as he can show the introduction of fomites from an infected place, he is satisfied. He looks no further for any other source of infection. Strange to say the best attested cases I came across were not those of conveyance by *packed* baggage, but by *clothing worn on the person*, sometimes for a number of hours, through the sun and air, which was against all other experience of this disease. I could not examine the older reported cases, but, as more of the modern ones which I did examine clearly excluded other methods of conveyance, I thought it fair to doubt if the older cases were more satisfactory. It is common sense that, when there is a great mass of negative testimony on a subject, all tending one way, we may not accept a moderate amount of positive evidence in rebuttal unless its data be conclusive. I thought the evidence of the Cuban and Mexican baggage was great enough for this rule to apply. The agreement for a conveyance by fabrics is a really negative one. The reporter says "there was no possible source of infection except the fomites." He means that he knows of no other. Exactly the same argument was used, and logically, for the spontaneous origin of yellow fever. Cases were cited for which no exposure to any source of infection could be made out,

and the statement was made that there was no exposure. These cases were (indeed are) not a few. They were reported with as much detail and with as much care and by as good men as those for which no exposure except to fomites is known. The argument for the spontaneous origin of yellow fever and that for its conveyance by fomites both depend on our accepting that there were no exposures unknown to the reporter. They stand or fall on the same class of evidence. As to the cases of infection carried by clothing worn on the person, which I had said seemed the best attested of all I had cognizance of, I knew that a large number of passengers had been coming during all seasons of the year from 1888 to 1898—ten years—from Havana to Key West and Tampa with no disinfection of the clothing they were wearing, and yet Key West and Tampa had kept free from yellow fever. It was not possible that the thousands who thus came over should have carried no infection if clothing worn on the person could carry it. There must then be some other explanation for the few cases reported in the United States. I think then that I was right on this evidence to count the conveyance by fabrics as "not proven." If in addition I had had what you now have: (1) The experiments of Reed, of Ross, and of the Pasteur Institute Commission. In these a number of people were exposed for days and nights to bedding and clothing used in every conceivable way about yellow fever patients. None of these people developed yellow fever from such exposure, although a number of them did when subsequently bitten by contaminated mosquitoes. To be fair, I wish to admit that the fact that Reed's experiments with fomites were done late in the year detracts from their value. This, however, does not apply to the work of the other two. (2) The freeing of Havana from yellow fever by Gorgas, although the clothing and bedding were not disinfected. (3) The continual experiment which the Havana quarantine and many of our own stations have been giving us in letting in baggage from yellow fever ports without any disinfection, and yet with no introduction of yellow fever.

In these last two the fomites which did not convey infection

were in infectible places in the yellow fever season. If I say I had had all this evidence in addition to that which convinced me, I would, I think, scarcely have considered conveyance by fomites worthy of discussion. And that whether I knew of any other method of conveyance or not.

I consider (1) that the mosquito stegomyia fasciata, acting as a host, does convey yellow fever from the sick to the well; (2) that this is the only method of conveyance.

The argument is based upon: (1) The analogy of other diseases conveyed by living hosts; (2) that the facts observed of the natural propagation of yellow fever agree with this theory; (3) that measures based on this theory have given the very results which they should have given if the theory were true; (4) no other natural method of conveyance is proven.

AN OUTBREAK OF YELLOW FEVER IN DE WITT COUNTY.

J. M. REUSS, M. D., CUERO.

After an interval of thirty-six years (1867) we have seen yellow fever once more. We had occasion to see three types of climatic fevers of the Gulf States of North and Middle America in the same season.

In the early summer we had, owing to continuous rains and high temperature an extensive epidemic of malaria. This was very obstinate, hardly yielding to very large and repeated doses of quinin and returning in most cases after from five to seven or twenty-one days, in spite of continuous treatment by quinin. Singularly in this fever was noted the absence of the more pernicious types which we had about here in former years, viz.: congestive chills and hematuria. No deaths were reported in the early summer. Excepting the large number of cases of black jaundice, the death rate was unusually small. Later on we had an extensive outbreak of dengue, commonly called "break-bone" fever.

While the malaria was always clearly intermittent and periodical, the dengue always had the remittent type, making unmistakable remissions, mostly in the morning hours, and rising to its height again in the evening. In both fevers the general symptoms of cephalagia, rachialgia and general muscular pains preceded, in the intermittent, mostly with a chill, in the dengue with chilly sensations, repeated mostly on the second and third days. This resembled in most cases very much the beginning symptomatology of fevers existing prior to yellow fever in former epidemics and if there had then been any yellow fever about, it would have made one suspicious. No deaths were, however, reported.

We often remarked, "This seems to be a very light epidemic of

yellow fever," but it lacked its virulence and fatality. In fact, this fever was always spoken of as the forerunner of yellow fever and was often followed by yellow fever in some parts of Louisiana and Texas. All it wanted was importation of the real "yellow jack," which formerly was brought in from Havana via New Orleans, except in 1867 and this year, when the fever came from Tampico via Laredo. The dengue lasted only about six weeks and disappeared as quickly as it came. In fact, we believe the stegomyia is also the carrier of dengue, until the real yellow fever germ is brought in from abroad, and then we have the real "yellow jack."

On August 29th when the fever appeared in Laredo, a lady (Mrs. D.) from there left before the quarantine was established and came to the Bennett ranch with her friend, Miss B., and a few days later was followed by her son. Both took sick with symptoms of the prevailing dengue. No suspicion was aroused, since the attending physician did not know from where they came. About sixteen days later two Mexicans were taken sick with the fever on the same place, wife and husband. After Mrs. D. and her son had gone, the lady's friend, Miss B., took sick, and a few days later her brother (Robert), and the symptoms aroused suspicion. It was found out that the lady and her son had come from Laredo. The cases, except the last mentioned, had been sick only seven days each and their profuse perspiration was marked by coloring the clothing very yellow and by an exceedingly offensive odor, the well marked yellow fever smell.

The first fatal case observed had rather a poor constitution. He had had some severe attacks of sickness a few years ago and showed no reaction and when seen by us presented all symptoms of asthenic fever, a walking case of yellow fever in its worst form; pulse 43 and temperature 96 average, with 50 per cent albumen. He died of black vomit seven days after taking sick. We saw this case two days before his death and it was reported to the health officer as yellow fever. The house was thoroughly fumigated and all necessary measures taken, isolation and protection being rigidly enforced. An autopsy, made in presence of State Health Officer

Dr. Tabor and Dr. Richardson of the Marine Hospital Corps, confirmed the disease by all its pathological signs.

A young lady, healthy and robust, Miss C., took the fever five days after the first fatal case, and just fourteen days after he first took sick. She died of black vomit on the sixth day and upon autopsy the same pathological conditions were shown as in the previous fatal case, but not so well marked. In both corpses the skin was deep orange color.

All inmates of the infected locality took the fever except one, who, however, did not seem subject to mosquito bites and was, on account of his business, rarely in the house. After the death of the seventh case, all inmates, nurses and attendants were removed and placed in a tent two miles from the house. The house was thoroughly fumigated and then closed up. The stegomyia fasciata was in abundance before fumigation. Miss Toerck, a nurse from the Salome Hospital, who was sent out a few days before yellow fever was diagnosed and was unprotected for two days, took the fever on the tenth day, the next day after the removal to the tents in the prairie, where no mosquitoes were found. She made, fortunately, a good recovery in six days. Miss Neumann, another nurse who was sent to the ranch a few days after the above nurse, was ordered to protect herself carefully with a veil and gloves. She was never bitten by mosquitoes, which had been the case with Miss T., and remained in excellent health until camp was broken up, which was after recovery of the last case and fifteen days after beginning of the fever. There were no mosquitoes to be seen in or about the ranch premises after repeated *sulphur* fumigations.

The treatment of the cases after yellow fever was diagnosed was as in former epidemics. In the last case the old treatment was followed. No improvement on this method is known to us. It was by eliminatives, diaphoretics, supportives and restoratives. In the onset hot mustard foot baths, mustard cataplasm to back and pericardium were used and several times repeated, with initial doses of calomel and castor oil, hot teas of sage or orange leaves and

occasionally rubbing the entire body with half cut lemons, which kept up a gentle action of the skin. On the third day when the traces of albumen and on the fourth day when 20 per cent of it appeared mustard to back and diuretics acted well. When on the fourth day great restlessness and distress appeared, morphia by injection was given. Not a grain of quinin, no antipyretics of any kind were given except a few doses of aconite. Critical symptoms showed on the fourth morning and were increased at night and on the fifth day a normal temperature, both in the morning and in the evening, proved recovery. These cases had the well known yellow fever smell. The diet was for the first days nil, afterwards only limited fluid diet allowed. The recovery was rapid, feeling better than before.

With the insufficient sanitary measures in Mexico, the lack of all government aid as to the suppression of the fever and the increase and the rapid railroad travel, we have to fear a recurrence this summer. Plenty of germs may have been left in Texas.

From San Antonio we have nothing much to fear, as former epidemics, as well as the last one, have proven that San Antonio is not subject to epidemical visitation. This was also shown by the great afflux of people during the fair.

From the Mexican border, where it has been so much prevailing in the cities and villages, the danger is great. Importation is probable via Laredo, Eagle Pass and even El Paso, through the more northerly Texas railroads, in fact, by its crossing the Rio Grande, one thousand miles from El Paso to the coast. It, therefore, behooves all physicians in the coast and adjoining counties of Texas to get well acquainted with this fever, study its first symptoms and learn the difference between this and other climatic fevers. This can often be done by always observing the types—intermittent, remittent and continuous—and in cases any ways looking suspicious, where communication with yellow fever can not possibly be excluded, use all means of protection for the family and neighborhood by extinguishing the mosquito and rigidly protecting oneself and all about the patient by strict isolation, by

screens and by leather gloves. We should rather stand the ridicule of a mistake in calling many suspicious cases yellow fever than to undergo the odium and mortification of letting the fever enter and risking a single life. If this is done, the unnecessary quarantine, often so ridiculous, the distressing scare of the people, stagnation of business, etc., can all be avoided.

From Cuba we have nothing more to fear as long as the safeguards are kept up, but it is doubtful if for many years the pest will be rooted out in its hotbeds, Tampico and Vera Cruz.

Let us do our best to prevent another outbreak, so terrible in all its consequences. Let the profession be firm and not be governed by commercial, social or political influences, and always stick to their convictions.

"And firm stand and true the watch,
The watch on the 'Rio Grande.'"

YELLOW FEVER.—THE LAREDO EPIDEMIC.

ROBERT L. DINWIDDIE, M. D., SAN ANTONIO.
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For many years Texas has been free from yellow fever, but on September 25, 1903, at Laredo, after an autopsy upon one of its victims the diagnosis of experts was "yellow fever," and the character of the disease which had been rampant there for two or three weeks was solved. The State Health Officer immediately declared quarantine against Laredo and Webb County, which was strictly maintained until December 1, 1903, previous to said date the temperature having dropped to 31 degrees F.

History of the Epidemic.—The disease first made its appearance in Nueva Laredo, directly across the river, and at first it was not recognized as being yellow fever, but was called "paludismo" or hemorrhagic malaria; afterwards, however, the increase at Tampico, and from there spreading to Victoria, then Linares and finally Monterey called attention to the possibility of its being carried here. The communication between these points requiring only a short time would make it no difficult matter to bring this disease into the United States. The first cases of a suspicious nature were noticed in Nueva Laredo and afterwards on this side of the river, two or three cases being diagnosed as suspicious. This was on or about the 16th day of September, 1903. On the 25th of September the United States Marine Hospital Service and State Health Officer confirmed the diagnosis of yellow fever, and not until then did we realize that we were in the midst of an epidemic.

It is not my intention to discuss the differential diagnosis, but will give you the results of the notes taken at autopsy:

Name, E. Charles, age 24, nativity Saltillo, Mexico.

Date.	Hour.	Pulse.	Temperature.
October 29	6 P. M.	128	39.4 C.
October 30	6 P. M.	128	40 C.
October 31	6 P. M.	115	40 C.
November 1	12 M.	112	39.8 C.
November 1	8 P. M.	100	39.3 C.
November 2	7 P. M.	98	39 C.
November 3	3 P. M.	100	37 C.

Patient died at 10 a. m. November 4, 1903; autopsy three hours after death.

Female mulatto, 24 years old, black vomit exuding from nose and mouth, incision median line showed considerable fat and dry, *liver* boxwood, typical, *gall bladder* empty; section of liver same as surface, perfectly dry and showing fatty degeneration; *stomach*, injection of the larger veins, extensive ecchymosis of mucous membrane, contained black vomit, mucous membrane coated with coffee-ground fluid, punctuated with capillary injection over cardiac end, pyloric end comparatively clear, but same general capillary injection not near so marked as in the cardiac end; *duodenum* full of black vomit, injected mucous membrane similar to the cardiac end of the stomach; black vomit leaked from bile duct upon separation of the pancreas; *spleen* very small, lobulated and dentated upon its edge; *kidney* slightly enlarged, upon sections no characteristic changes noticed. Diagnosis, yellow fever.

All of our autopsies were similar to this one, and I suppose we made about twenty-five or thirty.

Treatment.—First, prevent the disease if possible; second, give eliminative treatment; third, husband your patient's strength and let nature do the rest.

Preventive Measures.—Believing as I do that the sole means of spreading this disease is through the agency of the mosquito (female of the stegomyia fasciata), our first duty is to wage a war of extermination upon this pest. Destroy the mature mosquito by thoroughly disinfecting the houses, its eggs and larva by the application of coal oil to the surface of water contained in barrels, tanks, cisterns, depressions of the earth that are damp or liable

to become filled with water after the first rain. The amount of oil used upon barrels should be about two teaspoonfuls; upon cisterns four ounces, and other places in proportion. This oil should be renewed every four or five days. Screen the patient's room, and, if it does not admit this, a mosquito bar should be used. If the patient's condition is such that he can be moved, this should be done, and the whole house thoroughly fumigated, care being taken to protect the patient from mosquitoes by a bar during this fumigation. This should be done only during the first three and a half days of the patient's illness, as the mosquito is unable to transmit the disease later than the fourth day. For disinfecting purposes we use insect powder and sulphur, but after using the disinfectants mentioned for several weeks we decided that sulphur was by far the best disinfectant. All cracks, keyholes, windows, etc., in a house must be tightly closed and this is accomplished by using strips of manila paper, two and a half to three inches wide, cut in lengths to suit; where we have shacks to deal with we use paste made with flour and water; however, in the better class of houses it is only necessary to soak the paper in clear water and paste it on, which will adhere long enough for disinfecting purposes. The time required to disinfect after your pots are lighted is two hours for sulphur and four hours for insect powder, and after the latter an entire sweeping of the house, including the walls, furniture, picture frames, etc., collecting the trash and burning it; therefore, we prefer sulphur.

Metallic and bronze surfaces are not injured by sulphur if care is taken in the amount of sulphur used and the time allowed for disinfecting.

Treatment of the Patient.—The patient usually suffers with severe pains as long as he has any temperature and particularly if above 101 or 102 degrees F. In such a case you would be safe in prescribing one of the coal tar derivatives as acetanilid in combination with sodium bicarbonate, caffin and tartaric acid or citrated caffin, such a combination in doses of five grains or even ten grains and repeated in two or three hours if not relieved. Such a

tablet is found at the drug stores as acetanilid compound in tablets of five grains each. Some bromide in small doses may also be added to allay restlessness. Phenacetine and antipyrine may be used. I prefer phenacetine in combination with citrated caffin, seven and one-half grains of the former to two and one-half grains of the latter in powder, such a powder to be given every three or four hours if necessary, but on account of its price could only use it in a few cases.

I always make the first dose larger than usual and use the medicine as long as necessary until the pains are relieved and the patient begins to sweat freely, after which they are given only when required.

The bowels should be moved, preferably by a dose of salts, Murray preferred Glauber's, but probably Epsom works just as well. Should there be severe constipation an enema of warm water and soap should be given rather than depend altogether upon the salts. Calomel may also be given at this time should the liver become sluggish. To prevent nausea and vomiting the stomach should be given almost an entire rest; the patient may have water, lemonade, liquid peptonoids in small quantities and at frequent intervals. Food should be withheld as long as the patient has fever, if possible. After that the same care should be exercised as is done with the feeding of infants with their first food. Should there be nausea and vomiting, even black vomit, use mechanical means, such as bathing the face, putting cold clothes to the patient's throat, etc., together with an enema of normal salt solution every four to six hours. Should there be sordes of the teeth, swollen and bleeding gums, dry tongue, inactivity of the kidneys, etc., turpentine is indicated in doses of five to ten drops every three or four hours. If restless in the latter stages with a fairly strong patient trionial of sulphonal, as well as hyocyomine in conjunction with digitalin may be given. When due to weakness, strychnin may be added. When urine is scanty you will find, however, that there is really not inactivity of the kidneys, but simply retention of urine due to a failure of the bladder to empty itself, therefore use

the catheter when necessary. Yellow fever requires no treatment in 75 per cent of the cases. Ten per cent probably require some treatment, the balance, 15 per cent, require considerable treatment, with about 8 to 10 per cent deaths. In all cases see your patient often that you may be better prepared to direct the nursing. The patients should be made to husband their strength, they should not be allowed to leave their beds even to stool, the bed pan should be used. Great care should be exercised in convalescence, especially during the first exercise, allowing absolutely nothing to eat for two or three days after the fever has disappeared. To keep up strength during this time a little dry sherry or champagne is admissible. The mortality in this epidemic has been very light and I am sure we could have reduced it one-half if the Mexicans had not been superstitious, believing that the physicians destroyed the sick in order to stamp out the disease.

Our statistics from September 25th to November 30th are as follows:

Number of cases, Mexicans	691
Number of cases, Americans	359
Total	1050
Number of deaths, Mexicans	94
Number of deaths, Americans	8
Total	102
Death rate, Mexicans	14 per cent.
Death rate, Americans	2 per cent.
Death rate, general average	10 per cent.

Fifty-five Mexicans found dead or in a dying condition. The great number of Mexicans found dead or dying being over one-half the total number of Mexicans who died shows that their superstition is almost predominant.

I include in this paper my report to Surgeon Guiteras, of the Marine Hospital Service, of the condition existing at the coal mines at Minera, thirty miles north of Laredo.

LAREDO, TEXAS, October 12, 1903.

Surgeon G. M. Guiteras, Medical Officer in Command, Public Health and Marine Hospital Service, Laredo, Texas.

SIR: In pursuance of your order of the 9th instant, I proceeded to Minera, Webb County, Texas, for the purpose of disinfecting and reporting upon the yellow fever epidemic at that place.

I respectfully beg leave to advise that upon arrival I made a house to house inspection, accompanied by Dr. Thompson of the State Quarantine Department, and we found twenty-six positive cases of yellow fever. Topographically considered, the camp is specially adapted to yellow fever, provided it once obtains a foothold. The dwellings are in a hollow on the east, and southeast is an arroyo which is usually dry, but which at present has pools of stagnant water. On the west, north and southwest is quite a hill, on the south the Rio Grande river. The prevailing winds are from the east and southeast, affording a ready means of transporting mosquitoes to the infected as well as uninfected houses. The houses are located parallel to the arroyo in rows of five.

The first case "paludismo" (as reported) occurred upon the banks of this creek, the man having ten days (?) previously arrived from Bustamente, Mexico, in which place he had lost his mother and brother from the same cause. The exact date of his own death I failed to obtain, but twelve days ago two cases developed in this vicinity and resulted in death. The infection has spread northward along the row of houses until there are only three north rows of non-infected houses left.

Number of cases October 11, 1903	22
Number of cases October 12, 1903, 11 a. m	13
Total	35
Add previously reported	26
Total	61
Deaths October 10, 1903	1

With great difficulty I procured the gratuitous assistance of six or eight men who were very inefficient, and on this account I was able to screen only four houses and disinfect four. I was very much disappointed in some of my English-speaking friends leaving for a duck hunt on Sunday and carrying away the keys to our supplies with them so that we did not get to work until 11 a. m. My quarters were very unsatisfactory and I do not think my errand was an appreciated one. The schools had not closed until today when by my directions they were suspended.

I will say in conclusion I consider the situation very grave, and respectfully beg leave to offer the following suggestions:

1. Sufficient competent men and material to do disinfecting work.
2. Oil the arroyo and other stagnant pools thoroughly.
3. Additional police and river guards.
4. Suitable medicines and provisions for the sick.

Respectfully,

ROBT. LEE DINWIDDIE,
Acting Assistant Surgeon.

Upon my suggestion Surgeon Guiteras sent a sufficient number of men to Minera who completely disinfected the whole town. After which yellow fever disappeared, with the exception of a few sporadic cases.

For the preparation of this paper I am indebted to the kind assistance of my colleagues in the Marine Hospital Service, Dr. Geo. R. Tabor, State Health Officer, and Dr. McGregor, of Laredo.

It is not my intention to claim originality, but hope to convey to you a clear and concise idea of the epidemic as it existed in Laredo and Webb County and the methods adopted for its eradication, and I can not help but mention the kind treatment shown us by the people of Laredo. There was no discord between the physicians and citizens, but they worked in harmony with us from beginning to end.

DISCUSSION.

DR. JOHN T. MOORE, Galveston: I think this subject is too important to allow it to pass without a full and complete discussion. In the first place, I am somewhat surprised that the profession of this State and other States have been so slow in informing themselves concerning the means of conveying yellow fever. So far as I am personally concerned, from reading and from studying this disease and its transmission, I am convinced that the mosquito is the only means by which yellow fever is carried from an infected individual to another. Personally, I have had a little to do with yellow fever. It was my good fortune at the time of the outbreak of the epidemic at Laredo to go out there to make examinations; so as to exclude malarial fever. Dr. Foster, who was connected with the asylum here at the time, and I made about thirty examinations of those suspected of having yellow fever. I was not like our colleague, Dr. Dinwiddie. I did not feel a bit nervous about going down to Laredo. I believed so implicitly in the theory of the conveyance of yellow fever by the stegomyia fasciata that I had no more hesitancy about going there than I would have had about going to see a case of malarial fever. I have been surprised that doctors who accept this theory in word are so nervous about yellow fever. We were not in any case able to discover the malarial parasite. I learned, however, from a Mexican doctor across the border that he had examined numbers of cases of fever, and that he had found the malarial parasite in every one. It was even reported to me that he had examined three hundred cases, and had found the malarial parasite in nearly every one of them. It shows the ridiculous position which some people will take in regard to these things. I was particularly struck by the manner in which the State Health Department and Marine Hospital Service took hold of this matter. The only thing which met with my disapproval was the allowing of letters and other mail matter to be put through a nonsensical fumigation. It strikes me that we intelligent physicians ought certainly to be able to bring the people to understand that it is not necessary to disinfect letters that are dropped into the mail boxes. I believe our State Health Officer to be a most efficient officer, and I would like to see him take a positive stand on this subject of yellow fever not being conveyed by letters.

DR. J. P. OLIVER, Caldwell: For me to attempt to discuss the negative side of this question after such an able paper as that read by Dr. Carter would seem like presumption. It is a subject of great magnitude, one which involves the whole State of Texas, also the United States, as well as the Republic of Mexico, and it should be thoroughly discussed. Dr. Carter's paper was a very able one from the mosquito standpoint. I did not get any ideas from it other than those advocated by Mr. Carroll and the commis-

sion sent by the United States in 1902 to Vera Cruz and other places in Mexico. I understand from Dr. Carter that the mosquito is the only means of spreading yellow fever. Also that it is the permanent host. He does not say anything about the etiology of the yellow fever. Mr. Carroll says that the mode of spreading yellow fever is definitely known, but that its etiology is still uncertain. The germ of yellow fever has never been demonstrated in the blood of yellow fever patients. From this mosquito theory it would seem that there is a germ development, and, if there is a germ, it ought to be found by the microscope. Until the special germ is demonstrated in the blood of yellow fever patients, I maintain that the question remains an open one. In regard to the disappearance of yellow fever from Havana, where it has endemically prevailed for more than one hundred and fifty years, in my opinion its disappearance has been caused more by the improved sanitary conditions since it was occupied by the American forces than from any mosquito theory.

DR. J. C. LOGGINS, Ennis: I think there is also a negative side to this question. Not being a microscopist, and never having made a study of the mosquito, any hearing given me on the subject will be a hearing of doubts rather than a hearing of facts. While I heartily endorse the warfare which is being waged on the mosquito, it is because he is a nuisance, but I am unwilling to see a warfare waged on him because of a charge, concerning the truth of which I have my doubts. The statement that the mosquito is the host may be a scientific statement, but it is without sufficient proof to establish it as a scientific truth. We know that the mosquito theory does not explain many things which we know to be clinical facts. I have not had a great amount of personal observation of yellow fever since the epidemic of 1897, to which Dr. Paschal referred. In that year we had a case in a family of six. He was a popular young man. I diagnosed the case as dengue fever. Many went to see him. The house was teeming with mosquitoes. He died about the fifth day. Every member of the family had the fever, but it never spread beyond the family. The mosquitoes were never killed. Shall we accept the theory that the mosquito is the only host for the conveyance of this disease Let the advocates of that theory furnish us positive proof. They have not even agreed among themselves. As I understand it, the protozoan which they have described has not been in any way connected with the transmission of the fever. In fact their own men have not agreed as to whether this is a protozoan, or simply a vegetable parasite.

DR. W. J. MATHEWS, Austin: It was with pleasure that I listened to the able papers which have been read. I recall some experiments which were made by a very learned man, who took twelve men into a house, which was mosquito proof; clothing was taken from yellow fever patients, with the vomit on it, and these men were dressed in this clothing, and slept in

beds which had been slept in by fever patients. They remained there two weeks, and at the end of that time left there, well and healthy. This same man took ten men, and allowed them to be bitten by mosquitoes which had been exposed to the fever, and nearly every one of these men took yellow fever. In regard to these men who oppose the mosquito theory, I think the burden of proof rests with them to show what the cause of yellow fever is, and I think that it is only right and just that they should do so. They need not talk about spooks or anything else, let them talk about a theory that will account for the facts.

DR. H. B. HILL, Austin: The mosquito theory is thoroughly proven. I do not know of anything in medicine which has been so absolutely proven as has the mosquito theory of the conveyance of yellow fever. It seems to me that a man who can not accept that can hardly be expected to accept any of the doctrines of medicine.

DR. S. C. RED, Houston: I desire to ask Dr. Carter a question. We are pleased to have him here to give us this excellent paper on yellow fever. We are pleased also because he was in Cuba at the time this work of stamping out the fever was in progress, for the reason that we in this section of the country are particularly interested in anything relating to yellow fever. I would like to ask him a question regarding one phase of the question which he did not mention: What effect does cold have upon the mosquito? After the mosquito has bitten the subject there is a period of incubation of about twelve days. Now, what effect will cold have with reference to the ability of that mosquito to transmit yellow fever after the twelve days? Another thing which I would like for him to answer is this: In this country we have had a number of epidemics of dengue, and in every instance some one jumps up and cries "yellow fever." There are about 25 per cent of the cases which have no rash, and those who make this claim hold that they are yellow fever. How are we to differentiate in our diagnosis between this 25 per cent of dengue and yellow fever? About protection against these yellow fever patients. It is only during the first few days that they must be screened in. It is on the third day that they have albumen in the urine and then the diagnosis is made. Then, also, the time for protection has passed. Selah. The same thing may occur, together with lack of correlation between the pulse and the temperature, and still we may think it is a case of dengue. Ought we to subject such patients to the troubles of screening and isolation? I would like to ask Dr. Reuss whether these cases which he diagnosed as dengue had rash. I have seen cases of dengue and cases of yellow fever. I suppose I am reasonably familiar with the two diseases. So far as I am concerned, however, I must say that I am unable to make a diagnosis which differentiates accurately between the two diseases. Of course, I have not given any consideration to the matter of deciding by the death rate. I have heard capable men express widely

diverging views upon the question and would like to hear Dr. Carter on the same question.

DR. WILLIAMS, Edinburgh: I would like to express the extreme pleasure with which I have listened to these papers. I have heard Dr. Carter discuss this statement on two previous occasions. I should like to ask the gentleman who spoke, and who demanded some demonstration whether he demanded that same proof in regard to smallpox and scarlet fever; if not, then how does he maintain his position? In my mind, the mortality of yellow fever in the past has been largely due to blood-letting. What is the relation between cases of dengue and cases of yellow fever diagnosed as dengue? I think that information on these lines from experienced physicians would be of great value.

DR. J. H. PAYNE, Holland: I have no theory as to the transmission of yellow fever, but will state my experience with the yellow fever epidemic in North Mississippi in 1878. The first case who contracted the fever at Grenada was a young lady who had recently visited New Orleans; she died of the disease, and at her burial was a young man who had married a cousin of mine. He went home the same day twenty-five miles in the country. After ten days, one of this man's children, who hadn't been away from home in months, was stricken with yellow fever and died and from this foci of infection there were some twenty-five persons who contracted the disease, with about fifteen deaths. The man who was exposed at this first burial escaped the disease. I had the yellow fever during this epidemic, and, as every one in my town had died who were treated by the expert physicians from New Orleans and Mobile, I concluded I would experiment on myself by taking a teaspoonful each of calomel and bicarbonate of soda, which I consider saved my life. After getting up, I treated two other cases the same way, with the result that both got well.

DR. E. J. MELLISH, El Paso: I will state first that I have resided where yellow fever was not feared—in Chicago, and later in El Paso. One of the essayists stated that there is danger in El Paso. Now, we do not fear yellow fever in El Paso. I would like to ask the gentlemen who know more about it than I do whether the fever mosquito would be likely to live in El Paso. There has been no rain there for several months, and the bed of the Rio Grande makes a good baseball ground. Last year it was full to the banks for about six months. We have had no running water for three or four months. We have no fear. It is high and dry, although we do have a wet period occasionally. The water is taken from the river for irrigation purposes in Colorado and New Mexico. One of the essayists mentioned as one of the drugs used a well-known proprietary remedy which is known to be composed of a few simple drugs, the entire cost of which is not more than a few cents per pound, and which is placed upon the market at $1 an ounce. I regret that any such mention was made.

DR. ALBERT WOLDERT, Tyler: I desire to express my regrets at not being able to hear all of Dr. Carter's paper. The question in regard to the etiology of yellow fever has not been quite decided, but there is no doubt that it will be decided in a short time. Certain facts would seem to indicate that the specific germ is a form of protozoa. The bacillus of Sanarelli does not seem to be the causative agent. I would like to ask Doctor Carter why he uses the term "Stegomyia" fasciata, instead of "Culex" fasciata? The question why one species of mosquito should be able to convey the disease and the other not be able to convey it is one which has not yet been determined. My personal investigations would seem to prove that there is a difference in the anatomy of mosquitoes. As to the existence of yellow fever or any other fatal form of infectious disease, I do not think it is right for physicians to suppress the truth. That has been done in certain cities of this country. In San Francisco the existence of the Bubonic plague has been suppressed for years.

SURGEON CARTER, closing: I agreed to answer all questions frankly. I said that I could not answer all questions satisfactorily. As to the cleanliness of Havana, the city was cleaned up by the Americans. We went there and found the city very dirty. There had been thirty-one deaths during the year preceding the date at which we took charge. We cleaned it up, and had 310 deaths the second year after we took charge. The more we cleaned it, the more deaths we seemed to have from yellow fever. What Dr. Loggins has said is true, yet I can not see why the fact that we have not found the micro-organism is an argument against the mosquito theory. We have not found the micro-organism of smallpox or scarlet fever. I think that this really has nothing to do with the facts. My paper was not on the etiology of yellow fever, but on its conveyance. Now, as to the effect of cold. The time of incubation, as stated, is about twelve days. In cold weather, say about 85 degrees, it will be sixteen, twenty, to twenty-five, and it has been said that below 62½ degrees it will not live at all. Cold weather kills these mosquitoes. In regard to screening, I will state that in Havana we screen in these patients in the beginning whether we know it is yellow fever or not. We take no risks, but screen every one suspected. Answering Dr. Williams as to the relation between dengue and yellow fever, I do not think there is any. Dengue exists in India, in Southern China, in North Africa, and in South Europe, where they never have any yellow fever. If there were any relation between the two diseases, there would certainly be cases of yellow fever in these countries. Dengue is not a vital disease. It is not albuminous. It is so only in the southern parts of the United States which are liable to yellow fever, and only when we have yellow fever in the vicinity. My friend Dr. Holliday, of New Orleans, is responsible for having started the myth of black vomit in dengue fever. Now it has been reported that in something over three hundred cases of

dengue there was black vomit only where there was yellow fever in the vicinity. European writers say that it does not occur. Roupe states that two cases had been reported by Holliday. Edemeyer reports the same thing, and states that there must be some mistake. I see no relation between the diseases. The dengue cases in Ocean Springs did not take yellow fever afterwards, and it is well known that dengue patients are subject to yellow fever after having dengue. They are not immunized by having dengue. Answering Dr. Mellish, I do not think it is likely that there are stegomyia fasciata in his vicinity. I would remind him that there is probably plenty of water, but the authorities state that this mosquito dies in dry atmospheres very quickly. Replying to Dr. Woldert, we do not know the germ of yellow fever. We know something about it. As to why we call this mosquito Stegomyia, I will state that it is because Theobald says it is the Stegomyia. When I went to Cuba, I called it the Culex, and Theobald told me that it is not the Culex at all. In its anatomy it is very different from the Culex.

DR. REUSS, closing: I think Dr. Carter has covered the question so thoroughly that there is nothing left for me to talk about. Dr. Moore speaks about physicians being afraid of yellow fever and at the same time believing in the mosquito theory. Now I believe he will find very few doctors who believe in the mosquito theory who are afraid of yellow fever, but doctors who do not believe in this theory are very frequently afraid of it. Dr. Dinwiddie remarked that he had notieed no suppression of the urine, it was simply an incontinence of the urine. In our cases, after using the catheter we found no urine in the bladder. There was no rash in the dengue cases which we observed. In regard to dengue and yellow fever, I wish to make this positive statement: The first ones that took yellow fever had had dengue in a very severe attack about six weeks previously. In one case, we comforted the patient by telling her that she had had the same disease before, and would not take the fever, when low, she was the first one to take it, and she had a very different fever from that which she had had five or six weeks before.

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EXTRA-UTERINE PREGNANCY.

W. J. MATHEWS, M. D., AUSTIN.

Ectopic is considered by many a more appropriate term than extra-uterine, as ectopic signifies out of the normal place. In interstitial pregnancy the gestation sac occupies that part of the Fallopion tube which is embraced by uterine tissue, hence is not strictly speaking extra-uterine.

Ectopic pregnancy is a comparatively rare condition. The proportion to normal pregnancy is estimated as from one in five hundred to one in ten thousand. Until recently the treatment of ectopic pregnancy constituted a dark chapter in abdominal surgery.

Pary, an eminent gynecologist and an able investigator in this very field before the pathology of this condition was understood, penned the following sad graphic picture: "A bleeding vessel through which the red stream of life is rushing away can be ligatured, a gangrenous limb which is destroying the possessor by sending its poisonous emanations to the remotest regions of the body can be amputated, a cancerous breast which is sapping the vitality of its victim hour by hour can be removed with prospect of temporary relief, an aneurism that places life in constant jeopardy can often be cured by proximal or distal ligation. Even phthisis counts its many cures. But here is an accident which may happen to any wife in the most useful period of her existence, which good authorities have said is never cured and for which, even in this age when science and art boast of such high attainments, no remedy, either medical or surgical, has been tried with a single success."

Such in lawful and vivid language is depicted the dark picture of the past, but thanks to the onward restless march of pathology and the glorious stride of surgery, I can present to you today a picture radiant with the glories of surgical triumphs in this field,

bright as the other picture is dark with the gloom of failure and defeat.

Lawson Tait, between January, 1883, and July, 1888, operated on thirty-nine cases of ruptured ectopic pregnancy, and succeeded in saving thirty-seven of them. Writing of this condition, he says "I have never seen a case of suspected rupture or one in which we suspected intraperitoneal hemorrhage recover if left alone." Reed in his recent work eulogizes Tait in the following beautiful language: "Lawson Tait whose genius illumined the whole subject and established methods of cure that approached perfection. He elucidated the entire subject, classified its various types and phases and formulated and demonstrated with the mind of a genius and the hand of a master therapeutic resources which have placed his name forever among the benefactors of science and humanity."

Ectopic pregnancy may be defined as the development of the fertilized ovum in any part of the generative tract outside of the cavity of the uterus. It is my belief that the uterus alone is the seat of normal conception, and that all extra-uterine pregnancies must in their origin be tubal, and that abdominal pregnancy is the result of a primary or secondary rupture of tube. The development of the ovum in the tube inevitably results in the rupture of the tube from the twelfth to the fourteenth week, and sometimes much earlier.

The varieties of ectopic pregnancy, which are named according to the anatomical relations of the developing ovum, are as follows: Interstitial pregnancy is that variety where the ovum is developed in that part of the tube imbedded in the structures of the uterine wall. In this situation rupture takes place early, from the third to the fourteenth week, and, according to Tait, always ruptures into the peritoneal cavity.

A number of cases of interstitial pregnancy has been reported as rupturing into the uterine cavity; no doubt most of these cases were erroneously reported and were really cornual pregnancies. Tait's conclusions are entirely based on post-mortem examinations, museum specimens and facts obtained at operations. Yet, it is

fair to state that some eminent authorities believe that the fetus may rupture into the uterus and be delivered in the natural way.

In the next variety the ovum is found in the middle free portion of the tube. It is called isthmic tubal pregnancy. The danger of rupture in this variety is very great, as the gestation sac is quite thin.

The most frequent variety is when the ovum develops in the outer third of the tube or ampulla. This is the widest part of the Fallopian tube and hence we find ampullar pregnancies develop much beyond the earlier months of gestation. In this form tubal abortion may take place through the unclosed osteum abdominale into the peritoneal cavity before the eighth week, about which time the closure of the osteum abdominale takes place. Rupture of tubal pregnancy may take place into the cavity of the broad ligament, or the growing ovum may stretch the lower portion of the tube and by its bulk unfold the two leaves of the broad ligament without rupture of the tube. Tubal rupture into the broad ligament is safest for the woman, it being almost an impossibility for a fatal hemorrhage to take place into the cavity of the broad ligament, because this cavity, when distended to its utmost capacity, forms a limited space where a great accumulation of blood can not take place. Again, the pressure of the folds of the broad ligament itself exercises strong pressure on the bleeding point and becomes a natural and powerful hemostatic. Tait holds that broad ligament pregnancies yield all the cases which go to full term, the lithopedian and all the cases which by secondary rupture of the ovum cyst get to be called abdominal pregnancies.

There are other varieties of ectopic pregnancy of considerable interest. For example, the ovum in an ampullar pregnancy sometimes protrudes out of the ampulla into the general peritoneal cavity, and we have a condition known as tubo-abdominal pregnancy. It also happens that sometimes the ovum in ampulla pregnancy protrudes into and partly develops in cystic portions of the ovary. This condition is probably caused by adhesions of the

fimbriated extremity of the tube to the ovary at an early stage. This condition may be termed tubo-ovarian pregnancy.

Joseph Price has recently operated on a case in which he found a child at full term projecting on either side of the enlarged ovaries. One of the exceedingly few cases of ovarian pregnancy demonstrated by operation.

The existence of primary abdominal pregnancy is denied by the highest authorities. Tait affirms that a fecundated ovum dropping into the peritoneal cavity could never develop there, but would be rapidly digested. He goes further and states that a gelatinous body, such as that of a three or four months' fetus, would also be digested in the peritoneal cavity. In this connection Leopold's experiments are most interesting. He placed canine fetuses in the peritoneal cavity of other animals. Breaking up and absorption of the fetuses occurred with great rapidity.

In one dog, in which was placed a fetus two and one-half centimeters in length, no trace of it was found after two days. In another case two fetuses were emplanted in the peritoneal cavity, and the abdomen was opened on the fifteenth day. Nothing whatever was found save two small bodies the sizes of a lentil and fastened to the intestines by adhesions. Similar results were obtained with older fetuses. The results of these experiments should certainly tend to stagger our faith in the existence of primary abdominal pregnancy.

Tubal pregnancy rupture into the peritoneal cavity is almost invariably fatal to the mother from excessive hemorrhages, and the death of the fetus is almost certain.

The formation of a decidua in tubal pregnancy is now admitted by all competent observers. The sac has an amnion and chorian, the same as in intra-uterine pregnancy. The tubal ovum may rupture into the peritoneal cavity, its membranes remaining intact, the embryo continuing to develop until full term, the placenta still maintaining sufficient attachment to the mucous membrane of the ruptured Fallopian tube to keep up its blood supply. When the fetus ruptures into the abdominal cavity without any mem-

branous envelope, pathologists state that connective tissue proliferation about the ovum surrounds it with a vascular sac sometimes of consideral thickness. Jessop reports a case where the fetus lived to full term in the peritoneal cavity without any membranous covering whatever. In this case Dr. Jessop opened the abdomen and found the condition as stated, and saved both mother and child.

Termination of Ectopic Pregnancies.—The embryo in extra-uterine pregnancy, as a rule, is arrested in its development and dies. Even if it goes to full term, it must perish unless the aid of surgery comes to its rescue. A few cases of interstitial pregnancy have been reported as rupturing into the uterus and terminating in a natural labor, with safety to the mother. At an early period after rupture the embryo may be entirely absorbed, but after the fourth or fifth month it can not be absorbed but it may undergo fatty degeneration, into adipocere, mummification or calcification, becoming a lithopedian. These embryos thus changed have remained quiescent in the abdominal cavity for thirty, forty or fifty years, the woman maintaining fair health. Yet a dead fetus, though it may remain quiescent in the abdominal cavity many years, may yet become septic and kill the woman. The sac may become septic, suppuration set up and the pus work its way to the surface by various routes, maybe into the bowel, the vagina, bladder, or through the abdominal wall, the bones of the embryo making their way to the surface through suppurating fistulous tracks. Then again, as already stated, the fetus may go on developing to full term either as an extra-peritoneal or intraperitoneal pregnancy.

Symptoms and Diagnosis.—First, symptoms and diagnosis before rupture of tube; second, at period of rupture; third, symptoms and diagnosis when pregnancy has reached full term, child living.

First. Lawson Tait says that the symptoms of ectopic pregnancy before rupture are exceedingly misleading and the diagnosis almost impossible. He states that the large bulk of his patients had no suspicion that they were pregnant at all, and that there-

fore the first factor of interest in a correct diagnosis was absent. The woman may enjoy her usual health up to the time of rupture, nothing particularly occurring to warn her of her true condition. The last thing these women would admit would be pregnancy. Then again that a large proportion of these victims have never been pregnant or have not been pregnant for many years, shows how misleading the whole history may be. Most works on gynecology previous to rupture give three cardinal symptoms; first, disturbance of menstruation; second, sharp pains usually accompanied with faintness; third, the presence of a mass adjacent to and connected with the uterus.

When a woman who has never been pregnant or has not been pregnant for a number of years misses one menstrual period and has morning sickness, and in two or three weeks a little blood from the vagina stains her napkin, these slight hemorrhages not occurring at the regular menstrual period, and a few shreds of decidual membrane are found in the vaginal discharges, and if, in addition to these menstrual disturbances, a vaginal examination detects a mass to one side of the uterus or behind it; if, moreover, the patient suffers from recurrent unilateral pains, sharp tearing pains, above all if we introduce a probe into the uterus and find it a normal depth, or better still if we dilate the cervix and introduce a finger into the uterus and find it empty, our diagnosis could not be doubtful. Tait says the diagnosis of tubal pregnancy at time of rupture into the peritoneal cavity may be made with certainty seven times out of eight, and may be guessed at in the eighth instance.

Second. The diagnosis of primary intraperitoneal rupture into the peritoneal cavity is the diagnosis of intra-abdominal hemorrhage. This is the most dreadful accident that can befall a pregnant woman. Many die within a few hours after rupture. Without warning in the noonday of a useful life, probably in her usual health, she is seized with excruciating pains in her abdomen, in a few minutes she is pulseless. The pallor of death steals over her prostrate form, and in a few hours she may be a corpse, if prompt

and well-directed surgical treatment does not snatch her from the very jaws of death. Everything is against the unfortunate woman, the unresisting structures of the abdomen can not stem the rapidly flowing vital stream. The peritoneal cavity is capacious enough to contain all of the blood in her arteries and veins. Besides the blood is slower to coagulate in the peritoneal cavity than elsewhere. The diagnosis of this form of rupture depends more upon the symptoms than on any examination of the abdomen. Even when the intra-abdominal hemorrhage is enormous, the chief reliance must be placed upon the general condition of shock and collapse, as the presence of blood can seldom be demonstrated by fluctuation, abdominal palpation or bimanual examination. Deep pressure though frequently elicits general exquisite abdominal tenderness.

A tubal pregnancy rupturing into the cavity of the broad ligament has not the appalling and dreadful symptoms of intraperitoneal rupture. The intraligamentous space is limited and a fatal hemorrhage is almost impossible. A secondary rupture of a broad ligament pregnancy may take place into the peritoneal cavity and be accompanied by a hemorrhage as severe as a primary rupture and may produce the same symptoms and require the same treatment.

Tubal pregnancy rupture into the broad ligament is indicated by sudden and severe pain, generally unilateral, and faintness. The pain is generally quite severe, but the collapse is much less extreme than in an intraperitoneal rupture. In a fairly large extraperitoneal hematocele a tumor can always be felt above the brim of the pelvis and a rectal examination will find the bowel completely blocked by the pressure of the hematocele. These are two of the most important signs of extra-peritoneal hematocele and are never found in intraperitoneal effusion of blood.

Third. Normal intrauterine pregnancy is not always easily diagnosed. To differentiate between a large ovarian tumor and normal pregnancy is sometimes puzzling, but to differentiate between an intrauterine and extra-uterine pregnancy is a very

difficult matter, and sometimes impossible without dilatation of the cervix and a digital exploration of the uterus.

Lusk in his late work on obstetrics says, "twice within a year to my knowledge the abdomen has been opened in this city for supposed extra-uterine pregnancy and only an ordinary pregnancy was found." Extra-uterine pregnancy has been mistaken for intra-uterine pregnancy by two of the most eminent French physicians, Tarnier and Depaul. One of the main points of diagnosis given by authors is the ease with which the fetal parts may be felt. They reason that as the fetus is immediately behind the abdominal wall and outside of the uterus it should be easy to demonstrate the abnormal location of the fetus. Than this nothing could be more misleading. In extra-uterine pregnancy the fetal sac is sometimes as thick as the walls of the uterus and the abdominal parietes may also be very thick and in such a condition a diagnosis would be impossible. Again in normal pregnancy the uterus may be extremely thin and the abdominal walls may also be attenuated, and here is where mistakes in diagnosis are frequently made. Lawson Tait states that eight well-educated British surgeons brought eight cases to him which they supposed to be extra-uterine pregnancy and every one of them proved to be normal pregnancies and Tait could scarcely convince them of the fact. They were deceived by the thinness of the abdominal and uterine walls.

The next strongest point of diagnosis given by authors is that the pregnant sac is unilateral. This is true of the early months of pregnancy, but when pregnancy has advanced to the seventh or eighth month the uterine tumor occupies a central position and probably could not be distinguished from normal pregnancy. Judging from my own case, which went to term, the character of the labor attracted my attention more than anything else and the great prostration accompanying the pain. I first noticed that the pains were not like the normal rythmical intermittent pains of natural labor. In fact I noticed no intermittency in the pains, but just seemingly one long continuous agonizing pain. Nor do I think

we should expect to encounter intermittent rythmical pains such as we meet in normal labor. Uterine contractions are governed and maintained by a motor center in the medulla oblongata and it may be doubted whether this motor center has any influence or action over a pregnant sac outside of the uterine cavity, or whether regular rythmical intermittent contractions can take place outside of the uterus. Indeed the exact seat of the pains in extra-uterine pregnancy is a debated question. Many authorities are of the opinion that the pains are entirely associated with contractions of the uterus, while others think that the contractions occur in the gestation sac. The opinions of authorities on this point are very confusing. The gestation sac in these cases that have gone on to full term consists mainly of fibrous tissue. The muscle being small in amount and irregularly scattered throughout the sac wall. Besides many muscular bands are ruptured during the expansion of the tube, and, as the ovum enlarges, the great stretching and pressure the muscle is subjected to would be almost sure to cause its complete absorption. From these considerations I would be strongly inclined to believe that in a full term extra-uterine pregnancy there would be scarcely any muscular structures in the sac, and therefore we ought not to expect intermittent muscular contractions in the sac, but severe continuous pain from excessive distension of the sac and perhaps violent movements of the fetus. Therefore if I would emphasize or accentuate one symptom of ectopic pregnancy more than another it would be the character of the pains accompanying the labor and the collapsed condition present. But when all has been said, dilatation of the cervix, and exploration of the uterus with the finger, or even with the entire hand, is the only method of diagnosis worth considering except the history of the case.

Surgical Treatment.—First, before tubal rupture; second, after tubal rupture; (a) into the peritoneal cavity, (b) into the broad ligament. Before the tenth or twelfth week of extra-uterine tubal gestation all English authorities assert that a diagnosis is impossible. But if a diagnosis could be made the pregnant tube should

be removed. Such an operation would be conservative in the highest degree and for the best interests of the ill-fated woman. Her physician and friends and the unhappy woman herself would be relieved of the dreadful anxiety of an expected rupture and perhaps a fatal hemorrhage.

Second (a). The surgical treatment of extra-uterine intraperitoneal rupture is the surgical treatment of intra-abdominal hemorrhage. The cardinal principle in surgery of cutting down on the bleeding vessel and ligating it, applies with tremendous force here. No operation in surgery tries the coolness, the courage and the resources of the surgeon more than this one. Suddenly we are called to see a woman in profound shock, possibly in collapse and in such a condition we have to operate immediately. Every minute, every moment the shock is becoming more profound from internal hemorrhage. To delay operation simply means intensification of the shock. The woman will die if not operated on. The rapid opening of the peritoneal cavity could not add much to the shock and by this means alone can we check the hemorrhage.

Therefore, every consideration impels us to operate immediately even in the presence of shock.

Open rapidly the abdomen. Spend no time in removing clots, but with one or more fingers seize the tube and ovary and bring them up to the abdominal wound. Apply clamps to the broad ligament, one at the side of the uterus, including the tube and ovarian arteries, and the other clamp to the outer side of the tube at the pelvic brim, these clamps are removed afterwards without applying ligatures, if it is decided to preserve the tube, and the torn vessels are ligatured at the point of rupture. But if the tube is much damaged, ligatures are applied and the tube and ovary are removed. If shock is very profound the peritoneal cavity should be irrigated with hot normal salt solution. This procedure will not only tend to lessen the general oozing and cleanse the peritoneal cavity of clots of blood, but will also tend to lessen shock. The normal salt solution should be injected hot into the cellular tissue of the breast or back. If the operation has been aseptic no

drainage would be required. If a septic abscess has been opened during the operation, a glass drainage tube should be left in the wound for forty-eight hours, otherwise the abdominal wound is closed up immediately by the most approved methods. This operation gives the most brilliant results of surgery.

Second (b). Of this particular rupture Tait says, that in a great majority of cases of extra-peritoneal hematocele, the result of ectopic pregnancy, the disease may generally be left alone, being rarely fatal and should be interfered with only when suppuration or extreme hemorrhage has occurred. Generally the ovum dies, the effused blood is absorbed and the patient regains good health. If the hematocele becomes septic and suppuration occurs, the pus must be evacuated. Some recommend puncturing the suppurating sac through the vagina. Tait prefers an abdominal section for dealing with pelvic abscesses. But after rupturing into the broad ligament the fetus may continue to develop and a second rupture may take place into the peritoneal cavity and a fatal hemorrhage may occur at any moment. To avoid such a calamity the most experienced surgeons advise removal of the ovum in the interest of the woman. If the gestation has not advanced beyond the fourth month the place of incision is the usual median one. Expert operators would remove the entire sac, in some cases the sac could only be removed with the uterus. This would be a formidable and dangerous operation for the occasional operator. The safest operation for the doctor not doing much surgical work would be the following: after the ordinary median abdominal incision down to the sac, it is opened, the placenta and membranes are stripped from the sac and the raw cavity may be closed from below upwards by a long continuous catgut suture. The upper part of the sac may be removed and the edges carefully turned in so that the suture brings their peritoneal surfaces together. If the placental adhesions are very firm extensively separating the adhesions might cause a fatal hemorrhage. In such a case we should leave the placenta in the sac and plug it firmly with iodoform gauze. In about five or six days the gauze should be removed and the placenta

extracted, which can generally be done safely at this time without hemorrhage. The danger of sepsis is of course great as long as the placenta remains in the sac. But the frail bark is sailing between Scylla and Charybdis. If on the one hand the placenta is forcibly removed the woman will die from hemorrhage whilst on the other hand if the placenta is not removed she is in constant danger of septic poisoning. Therefore we have to choose between two evils. I believe leaving the placenta in the sac when the adhesions are dense and extensive is the lesser evil, because we can usually guard against and prevent sepsis, but the most expert surgeon can not always prevent a fatal hemorrhage while separating firm and extensive adhesions.

From the fifth month up to full term the median incision should not be used, but the addomen should be opened in the side because the enormous growth of the extra-peritoneal gestation has so stripped the peritoneum from its normal relations that by making an incision in the side the sac can be opened, without entering the peritoneal cavity. In many broad ligament pregnancies a secondary rupture does not take place and the gestation remains to term subperitoneal, and as it ascends upward into the abdomen the peritoneum is gradually stripped from the abdominal parietes and viscera. The peritoneum is frequently raised up out of the pelvis, entirely from the bladder, from the posterior surface and from the upper part of the anterior surface of the uterus. In one case Berry Hart showed a frozen section where the peritoneum was stripped from the anterior abdominal wall for a distance of seven and three-fourth inches aboves the pelvic brim. This is an important point to remember when operating, as this stripping up of the peritoneum makes it possible to make the incision in the side and open the gestation sac without entering the peritoneal cavity, a possibility of the greatest importance to both the operator and the patient.

Child Living at Term.—All surgeons are not agreed as to the surgical treatment of extra-uterine pregnancy at full term. Some surgeons prefer to let the fetus die before operating in the interest

of the mother, regarding the life of the fetus as of no importance compared with that of the mother. Other surgeons regard both lives of equal value and endeavor to save both by operation. One well-known gynecologist puts it thus: Should I operate and possibly save the life of a child, which at best will stand few chances of surviving, and by so doing greatly add to the danger of the unfortunate mother, or should I delay the operation and thus permit the child to die and the placenta to lose very much of its vascularity, if indeed not all of it, and by this delay very much enhance the chances of recovery of the woman? If the child is alive at full term Lawson Tait favors immediate operation. To use his own language, "I therefore advocate the principle of saving a child who has survived the catastrophy of the primary rupture of the tube by being extruded into the broad ligament." In another sentence he says, "if the child is still alive and near the full term I believe it to be our duty to operate." I pin my faith to Tait's teaching.

Report of Cases.—Case 1. I was invited by Dr. Beaty of Manchaca to see a patient giving the following history: The patient was aged 35. About ten years before she gave birth to a healthy full-term child, enjoying excellent health up to the present pregnancy. She became pregnant about five months before this first visit. She had suffered no more pain than in former pregnancies. For a month or more she had chills and fever but no hemorrhage from uterus and no fainting spells. She showed me a running sore which she said would not heal. I passed an ordinary uterine probe into the suppurating sinus, about six inches downward from the naval. The next morning I operated and carefully laid open the fistulous track until I reached the cavity from which I removed a three or four months fetal skeleton. I think the cavity I reached was in the broad ligament. I packed the cavity with iodoform gauze and in a few weeks she was well.

Case 2. Mrs. A. an artist 35 years of age, of German birth, a well developed woman. Eight years intervened between her last pregnancy and this one. She had often been treated during these

years for endometritis. She had two normal pregnancies before the present one.

She was six months pregnant when I first met her, and gave me the following history: She enjoyed good health for the first four months when she was absolutely free from pain, nor did her menses return during this time. She knew no difference between this pregnancy and her other two, up to the end of the fourth month when she was suddenly seized with violent pains in the lower part of her abdomen and rapidly passed into a state of collapse. She fainted and fell on the floor of her room in an unconscious condition, where a few minutes later her husband found her lying. She was so weak that she had to be lifted into bed, where she remained for two weeks, at which time she left her bed and did not return to it though still quite feeble, but at the end of a month she had regained her usual health. I think at this period she had a tubal rupture into the broad ligament with considerable hemorrhage. Her health remained good up to the end of the sixth month when she was again attacked with violent pains and fell into a collapsed condition, but not as profound as her former attack. It was during this attack I first met her. She was suffering great agony and was very weak. I injected hypodermatically the fourth of a grain of morphine and the thirtieth of a grain of strychnia and in a short time she was fairly comfortable. In twenty-four hours she was well over the attack. I believe at this time she was suffering from nervous shock without rupture or hemorrhage. Dr. Bennett of this city saw her with me in this attack. The terrible pain and shock suggested the thought of extra-uterine pregnancy and we even discussed the probability of such a condition. But we were by no means specially committed to such a diagnosis. I saw no more of her until her labor pains commenced at full term when her husband again sent for me. I went to see the case, somewhat worried over the past history of my patient, and my anxiety was not lessened by her appearance. She was becoming rapidly exhausted although her pains began only thirty minutes before I first saw her. The pains were different from

any I had ever witnessed. They did not intermit and were more intense than ordinary labor pains. The pains seemed like one long continuous agonizing pain and she was rapidly approaching the point of collapse. I became quite alarmed about her strange symptoms. I at once told her husband that I considered his wife in a serious condition and that I wanted consultation. In a few minutes Dr. J. W. McLaughlin arrived.

I told him I was in doubt as to the exact condition of my patient and that I wanted to make an exact diagnosis. Dr. McLaughlin put her thoroughly under the influence of chloroform and I at once made a careful vaginal examination. After introducing my finger I found the os in a patulous condition, so much so that I easily introduced my index finger within the cervix. I continued introducing one finger after another until all my fingers were within the cervix, and in a short time I was able to introduce my whole hand into the uterus. The uterus was just large enough to lodge my hand. There was nothing in the uterus but my hand and now I was absolutely certain that I had to deal with an extra-uterine pregnancy. I at once made arrangements with Dr. McLaughlin to meet me again in one hour, as that would give me time to select and sterilize my instruments. While my office girl was boiling the instruments I took from my library Tait's latest work on abdominal surgery and read the chapter on extra-uterine pregnancy. As a result of my reading I came to the conclusion that I had to deal with a broad ligament pregnancy unruptured. I posted myself as to how the peritoneum stripped from the abdominal parietes and the proper place to make my incision, without which knowledge I would have been completely at sea. Faithfully following the rules laid down by Tait I made an incision well down on the right side of the abdomen, and dissected carefully down until I exposed the back of the fetus. I then cautiously yet expeditiously extracted the child and handed it to Dr. Frank McLaughlin who kindly assisted me in the operation. As I reached the child to him to my great joy it screamed lustily. The Doctor very kindly and patiently gave the baby his entire atten-

tion. And now came the serious question as to what disposition we should make of the placenta. Tait's advice was to leave it in the sac if extensive adhesions existed. In this case the adhesions were very firm and very extensive. Indeed the placenta was spread all over the pelvis. It was the unanimous advice of all the physicians present to leave the placenta in the sac. The edges of the sac were stitched to the edge of the abdominal wound and packed with iodoform gauze, a twist of which was brought outside of the abdominal wound to maintain drainage. The cord was also cut on a level with the external incision. An abundance of sterile gauze was placed over the front of the abdomen and the toilet of the wound was completed after the most approved method.

As stated the unfortunate woman was suffering from shock when the operation began. The operation, which was very rapidly done and was an easy operation, did not seem to increase the shock. But in spite of the best care and the strictest antiseptic precautions she died on the second day after the operation. Her temperature only reached one hundred degrees. I believe she died from the effects of shock and not from sepsis. She never had a chill, and a post-mortem examination failed to discover a drop of pus. I believe this case was a broad ligament pregnancy and that our diagnosis was correct, judging from the fact that, at no time during the operation did either bowel or omentum appear in the wound. At the post-mortem I removed the entire gestation sac and sent it down to the pathologist of the medical department of the State University for examination, but to my everlasting regret it was lost in that laboratory. The child is still living and in good health. It is now seven years old, a beautiful, brainy, well-developed child, indeed a child of unusual beauty and brightness. I regret very much not being able to save the life of the mother, but I am conscious of the fact that I did my very best to do so. I employed the very best surgical help I could obtain. I am happy in the belief that the mother would certainly have died in a few hours whether I operated or not. I also feel happy in the belief

that without operation two lives were doomed and that by operating I saved one precious life.

DISCUSSION.

DR. J. E. GILCREEST, Gainesville: I have never seen but one full term case of extra-uterine pregnancy and that was some twelve months ago. I did not see the woman during the first part of this pregnancy. She was attended by three different physicians for attacks of pain, but none of them made a diagnosis of ectopic gestation. It had been fifteen years since she had given birth to a child, and she was very anxious to have an heir, so she went on happy over her condition and did not suffer much and her general health remained quite good. She had felt motions until after the ninth month, when they gradually ceased. She continued waiting for labor until about the end of the tenth month. She finally commenced having slight pains and sent for me. I went and made a rather hurried examination, and failed to diagnose her true condition. I thought it was a normal pregnancy, and that labor had not yet commenced, but soon would. The pains continued, and I saw her again in a few hours. I examined more closely then, and felt sure that I had an extra-uterine pregnancy to deal with. I called in two other physicians and they fully agreed with me. We advised an immediate operation, but she wished to wait for some of her relatives to come and so postponed it for three days. Late in the afternoon preceding the morning that she was to be operated on, she was taken with severe pains and felt weak and fainty. She looked pale, too, as if she were having an internal hemorrhage. This condition continued and her pulse grew weaker and more rapid. We felt that she would die without an immediate operation, and likely with it. But we got ready and operated as quickly as possible. We found that the sac had ruptured and the liquor amnii had escaped into the free abdominal cavity. We removed the child, which was large and showed some signs of having been dead for some time. We detached and removed the placenta without much trouble, washed out the cavity with normal salt and left iodoform gauze and glass drainage tube in lower angle of wound, then closed the remainder of the incision. She died in about fifteen hours after the operation, from the shock, in spite of all the stimulants that we could use.

THE REPORT OF AN UNUSUAL CASE.

J. F. Y. PAINE, M. D., GALVESTON.

The history of the case which I shall report is interesting from several sides: The nature and extent of the lesions; the causes from which they resulted; the associated complications; the operative treatment, and results.

Patsy Clinton,* colored, age 40; native of Washington county, Texas; married; occupation, washerwoman; sanitary condition of home represented to be good. Family history unusually clear, both parents and seven brothers living and all in excellent health. Has had the ordinary diseases of childhood; never had rickets. Malarial fever and other climatic diseases, as well as yellow fever and smallpox are included among the disorders from which she has suffered later in life. Menstruation began at the age of 13, and has always been regular, recurring at each lunar interval, except during pregnancy, and since the birth of last child. The flow continued four days, and was uniformly excessive, clots being frequently passed. Leucorrhea appears to have been habitual. There is nothing in her history which indicates the existence at any time of either syphilis or gonorrhea. Pelvis is normal in all measurements.

She has borne fourteen children at term with normal labors. No miscarriage or abortion. Eight children living; oldest is 24. The last was stillborn, three years before she came under my observation.

Her history, as related by herself, is as follows: Three years before she gave birth to a large, dead child, after a most painful labor, which lasted about thirty-six hours, her suffering during the

*I am indebted to Dr. W. S. Wysong, interne in the John Sealy Hospital, for the notes of this case.

"last day and night" being continuous and agonizing. The degree of exhaustion caused anxiety, and fever followed. A profuse and offensive discharge from the vagina persisted, and after a few days it was noticed that clothing and bed were constantly soaked with urine, none being voided in the natural way. Instead of getting up in a week, as after former confinements, she did not leave the bed for more than a month. Convalescence was not only unduly prolonged, but interrupted by pelvic pain of greater or less severity. Strength was regained very slowly; locomotion was attended with discomfort, and even sitting for a length of time caused distress; much time was, consequently, spent in the recumbent posture. She was disabled for the performance of the lightest duties of life. About six months after this confinement, a red, almost insensitive mass was noticed at the orifice of the vagina, which slowly increased, until it protruded from the vulva. Menstruation has been suspended since the last parturition.

It was at this juncture I first saw this patient, having been admitted to my service in the John Sealy Hospital in February, 1903. She was above the average in stature, or rather stout build, and presented the appearance of being fairly well nourished. Long suffering and inactivity had made her nervous and apprehensive. Examination under chloroform anesthesia revealed the following conditions: Incomplete laceration of perineum, edema of vulva with enlargement of sebaceous glands of labia, inflammation and infiltration of the tegumentary tissues of the inner surfaces of both thighs, extending nearly to the knees, with occasional excoriations and ulcers, resulting from the irritation of constantly dribbling urine. A deep red, granular mass, about the size of a mandarin, protruded from the vagina, which was found to be the walls of the bladder; this viscus—turned inside out—had descended through the opening in the vesico-vaginal septum. The orifices of both ureters could be plainly seen, from which urine, in spasmodic jets, was expelled at intervals. Replacement was not difficult, as the entire vesico-vaginal septum had been destroyed to the extent of involving the neck of the bladder and upper portion of the

urethra. A smooth, apparently solid, and freely movable round shaped tumor, about six inches in diameter, occupied the lower left quadrant of the abdominal cavity.

One of two factors would seem to explain the vesico-vaginal lesion. The bladder being distended may have been forcibly jammed downward into the pelvis by the slowly advancing head of the child, and, when the limit of resistance was reached, rupture through the septum occurred; or, prolonged arrest of the child's head in the pelvis, due to faulty position, incomplete flexion, oversize or premature ossification of the cranial bones, or uterine inertia may, by pressure, have produced extensive tissue necrosis, and subsequent destructive ulceration. The increased intra-abdominal pressure, consequent upon the presence of the tumor, affords, at least, a reasonable solution of the inversion of the bladder.

The operative treatment of this case is interesting mainly from the standpoint of results and the unusual, if not unique, method of retaining the bladder in position. On March 7th, two weeks after admission to the hospital, the abdomen was opened by median incision and the tumor (dermoid cyst of left ovary), together with right ovary, which was cystic, were removed. The inverted bladder was replaced, and its summit sutured with fine silk, bilaterally, to the parietal peritoneum. I have been unable to find in the literature at my command any mention of a case similar to this one, or reference to the lines of surgical treatment employed in it. Convalescence was entirely without event. From the day following the operation the patient declared she was more comfortable than she had been since the date of the injury. For the unhealthy condition of the mucous surfaces of the bladder and vagina, copious irrigation with warm sterile 2 per cent solution of boric acid, repeated several times a day, was successfully employed. With proper protection from urine and appropriate treatment, the dermatitis of the thigh speedily disappeared.

With complete recovery from the previous operation, and the tissues of the bladder and vagina in fairly good condition, an operation was undertaken April 5th for the restoration of the vesico-

vaginal septum and repair of neck of bladder and upper urethra. The large denudation included an extensive dissection of scar tissue, which, when completed, appeared to embrace the entire anterior vaginal wall, from fornix to introitus. Coaptation was effected by means of silkworm gut sutures. Patient was made to lie upon the abdomen, shifting from right to left latero-prone, and was kept in this position for two weeks, with apparently very slight discomfort. A self-retaining catheter was employed with usual antiseptic precautions; the bladder being irrigated morning and evening with warm, sterile, 2 per cent boric acid solution. The bowels were moved daily in the knee-elbow position, with safeguards against contamination of vagina. The only vaginal dressing was daily irrigation with a warm 2 per cent solution of carbolic acid. Antiseptic pads were constantly applied over the vulva. The vaginal sutures were removed partly on the eighth and all by the fifteenth day, a procedure which I have learned is not best as a routine practice. This operation was only partially successful; union was complete in the neck of the bladder and urethra, but the opening in the septum was reduced scarcely more than half its original extent. That she might enjoy more favorable opportunity for recuperation, the patient left the hospital May 10th, and did not return for a month. Meanwhile saline irrigations of bladder were exhibited daily.

The second operation upon the anterior vaginal septum was done June 16th, and, as in the former essay, under rigid antiseptic rules. The margin of the vesico-vaginal opening was denuded in relatively a wide strip, the raw surfaces of the anterior and posterior borders were brought together, and the sutures so placed that the line of apposition ran transversely across the vagina. Silkworm gut sutures, about five to the inch, were used. A self-retaining catheter, daily irrigation of bladder with boric acid solution, and antiseptic vaginal douches were employed in a similar manner, and with the same antiseptic care as in the first instance. The vulva was constantly protected by pads of bichloride gauze, and

pollution of the vagina during defecation was averted. The abdominal decabitus was maintained for three weeks with very slight inconvenience to patient. The first vaginal suture was removed on the fifteenth day, the last on the twenty-second day. The measurable success of this operation is to be accredited chiefly to the unusual length of time the sutures were allowed to retain their support. I have come to believe that in plastic operations, sepsis being absent, sutures should not be removed until union is complete or severe cutting of tissues becomes apparent. The result of this operation was almost perfect, the patient being able to retain the urine without discomfort and to empty the bladder voluntarily.

Unusual moisture of the parts about the vulva suggested the possibility of a vesical fistula. Careful ocular examination, however, failed to detect even a suspicion of an opening in the field of suturing; but distension of the bladder forced, through an invisible breach in the septum, the injected fluid in small drops. On August 4th this point, including the tissues of the septum to the vesical mucosa, was lifted up with tenaculum, a very small portion snipped off with scissors and the raw areas perfectly approximated by a single silkworm gut suture. Owing to the friability of the structures, the suture soon cut out, leaving a vesical fistula about one-tenth of an inch in diameter.

In spite of generous feeding, reconstructive remedies, regular and active performance of functions, and ample amount of sleep, the patient became neurasthenic and melancholic, and was sent home. She promised to return if the fistula should not close, but nothing further has been heard from her.

This distressing case furnishes an important object lesson. It demonstrates the fallacy of reposing an unreasoning confidence in the powers of nature. While the golden rule not to meddle with the physiological performance of a function must not be disregarded, it should be kept in mind that legitimate grounds for interference may arise in the simplest labor, and the physician should ever be on the alert to forestall dangers. The bladder should from

time to time be completely emptied during the progress of labor; faulty presentations and positions promptly rectified; incomplete flexion corrected; rotation promoted, and, above all, when the head has descended into the pelvis, the trusting, helpless woman should not be subjected too long to the useless barbarity and great danger from pressure before resorting to instrumental delivery.

RETRODEVIATIONS OF THE UTERUS.

ERNEST J. MELLISH, M. D., EL PASO.
Surgeon to Hotel Dieu Hospital.

The term "retrodeviations," as employed in this paper, includes retroflexion and retroversion. However, in treating the subject, the normal, transitory retroversion, produced by a distended bladder pushing the fundus backward or a distended rectum forcing the cervix forward is, of course, left out of consideration, excepting as predisposing causes of pathologic displacements.

A comparatively solid, heavy, and oblong organ, like the uterus, suspended and held in place by a series of elastic structures, normally movable within wide limits and subjected to varying degrees of pressure from different directions, is very prone to the occurrence of abdominal displacements. Besides the ligamentous supports, there is an extensive bed of cellular tissue below and at the sides of the uterus which forms an additional elastic support.

Etiology.—The chief causes of retrodisplacements of the uterus are: A general weakness shared by the pelvic structures; the wearing of corsets or tight waistbands, or the suspending of clothing on the hips, particularly during the developmental period; subinvolution of the uterus and its ligaments after abortion or labor; increased weight from any cause, as metritis, neoplasms, etc.; peritonitis with adhesions; inflammation of the adnexæ, with increased weight and dragging on the uterus; rectocele and allied conditions causing dragging on the uterus in the axis of the vagina; bilateral lacerations, atrophy or elongations of the cervix, allowing the uterus to sag in the axis of the vagina; pelvic cellulitis; abnormal distension of the rectum (pushing the cervix forward) or of the bladder (forcing the fundus backward); neoplasms of the uterus (increased weight) or of other pelvic tissues (encroachment

on the uterine space); sudden tension on the uterine ligaments, as from a fall, jumping the rope, etc.

It is probable that improper clothing during the period of puberty, together with a lack of exercise and development, causes fully as many retrodisplacements as subinvolution after labor. Of my thirty-six recorded cases, fifteen (41.6 per cent) were in nulliparæ, and this, I believe, is a fair average of all my cases.

It is a common belief, shared by some physicians, that uterine displacements do not exist in virgins. This belief entails an untold amount of unnecessary suffering. Several observers have found retroversion in embryos and in the new born, but it is a rare condition. Retrodisplacements in girls are not noticed until the uterus has become heavier at the period of its functional activity, when it may become an important source of disorder. The importance of retrodeviations in the causation of disability and disease is not considered so great as formerly, nevertheless, it is pretty well established that "simple" retrodeviations do frequently lead, directly or indirectly, to impairment of health, even in virgins. It is fair to infer that a normal uterus normally located will functionate more normally than a dislocated uterus. Yet there are eminent members of our profession who contend that "simple" retroversion is not a pathologic condition—does not of itself produce symptoms nor lead to their production. There are some, perhaps many, retrodisplacements existing for considerable periods without symptoms, but that they are devoid of danger few will affirm. This remark pertains only to marked, permanent displacements. Leaving out of consideration all theoretic dangers, there is the actual, not remote, danger of incarceration of the gravid uterus early in the period of gestation. However, most observers are confident that "simple" retrodisplacements are prone to become "complicated" ones. We know there are many "simple" hernias without symptoms, but we do not claim they are not prone to become dangerous. Should a retroversion cause directly no other symptom than obstructive constipation, that alone is sufficient to start the patient on the down grade.

Retrodisplacement of the uterus is a very common disorder. Schröder says that over 25 per cent of all women have retroflexion or retroversion. Among 303 patients examined by him at Königsberg having no pelvic symptoms there were seventy-nine cases of retrodisplacement (26.7 per cent), while among 108 complaining of pelvic disorder thirty-nine (36 per cent) has version or flexion. These percentages probably are higher than would obtain in this country, because the conditions of life among the European peasantry are, in many respects, much less favorable than we find among the same class here. In their combined observations, embracing some thousands of patients, Winckel, Lohlein, and Sänger found retrodeviations in nearly 18 per cent of all gynecologic patients.

Symptomatology.—The general symptoms usually associated with retrodisplacements pertain largely to the nervous system, like hysteria, neurasthenia, headache, backache, syncope, palpitation, gastralgia, amblyopia. The menstrual flow usually is increased. Abortion occurs in about a third of the cases of those who conceive.

Diagnosis.—The diagnosis of retrodisplacements usually presents no difficulties under bimanual examination. Sometimes, however, it is impossible to diagnose between an adherent fundus and one incarcerated below the uterosacral ligaments, the latter forming a sort of buttonhole above the body of the uterus.

Treatment.—The prophylactic treatment for retrodisplacements pertains largely to hygiene, especially during the developmental period. A large percentage of acquired retrodeviations originate in the puerperium, hence, as a prophylactic measure, the necessity for repairing lacerations and of examining at the end of two and four weeks after parturition to determine the position of the uterus. Neglect of this routine by accouchiers gives rise to a great amount of suffering and aids very materially in swelling the income of the surgeon.

The curative treatment includes general and local measures, operative and non-operative. When unaccompanied by inflammation, retroversion may at first not be constant. It is in this class

of cases that a general tonic treatment, with avoidance of overdistension of rectum and bladder, together with regulation of the clothing and perhaps local non-operative measures afford most satisfactory results. In many cases postural treatment with, perhaps, astringent douches will be all that is called for, but in some the wearing of a properly fitted pessary for a few weeks or months is essential.

In cases of retroversion of the second or third degrees the best treatment is often operative, whether the case be "simple" or "complicated." If time and expense are of little consequence to a patient, non-operative treatment may be tried where otherwise operation would be advised. In a large proportion of cases a properly fitted and well applied pessary will accomplish a cure, especially in comparatively recent cases. It is probable that the pessary always fails of a cure in the class of cases where the round ligaments have pulled out of the inguinal canals into the abdomen, leaving practically none of the essential part of the ligament in the canal.

The mere suggestion of the use of the pessary to some physicians and gynecologists is strong evidence in their minds that one is either insane or obsolete. Nevertheless, the pessary is an exceedingly useful appliance if rightly used in properly selected cases. The trouble with most physicians is that they do not know how to use the pessary. It should not be necessary to say that the pessary should not be applied with the uterus in retroversion, yet we find many patients who have had a pessary applied without the uterus having first been replaced. The pessary must not press on prolapsed adnexæ, nor on inflamed tissues, consequently such conditions must be remedied before the application of a pessary. A patient is not conscious of the presence of a well selected and properly fitted pessary, and when a pessary produces discomfort it is a sign it is doing harm. None will deny that there are drawbacks to the employment of the pessary. If badly used it is a source of real danger, and in order to be used safely the patient must be kept under observation and must also be a fairly intel-

ligent and careful individual. In considering the advisability of employing the pessary, we have to take into consideration the class of patients who absolutely refuse surgical intervention. Many of these patients will resort to any amount of inconvenience and expense to avoid operation, and, often, persistent treatment along right lines and the use of the pessary will remove their disability. In some cases it may require years of treatment, while in others treatment will be but palliative. Many patients will accept palliative treatment when they absolutely refuse operation.

The surgical treatment for retrodeviations is absolutely essential in a very large percentage of cases if we aim to obtain a lifetime cure of the disorder and its complications. Some fifty methods of operating for the cure of this condition have been tried, the great number of operations being the strongest evidence of their shortcomings.

The attachments of the broad, round, and uterosacral ligaments and those of the bladder to the pelvic wall assist very materially in supporting the uterus in position, the latter preventing, in a measure, anterior sagging. The tissues of the vagina and of the pelvic floor constitute important supports to the uterus, either directly or indirectly, and intraabdominal pressure is a large factor in preventing retroversion.

In order for the fundus to get into the hollow of the sacrum the round ligaments must be stretched, while for the cervix to go much forward the uterosacral ligaments must be elongated and at the same time the broad ligaments must be twisted and stretched. In the vast majority of cases replacing the uterus and restoring the round ligaments to a practically normal condition, together with repair of lacerations of the cervix and of the pelvic floor when present will serve every purpose.

Shortening the round ligaments for the cure of retrodisplacements of the uterus was first proposed by Alquié, of France, in 1840, but the suggestion was not well received, and the operation was not adopted until 1884, when Alexander, of Liverpool, per-

formed it and carefully described the technic. Adams performed the operation independently a few months later.

The Alexander-Adams operation is right in principle, and will, in a general way, probably maintain its position as the best operative procedure for the treatment of retrodeviations. To be sure, the technic may be modified somewhat, and in a proportion of cases something additional will be indicated, as shortening the uterosacral ligaments and repairing lacerations.

Any operative procedure for "simple" retrodisplacement must be practically devoid of danger and must yield a permanent service to the patient in not permitting a return of the displacement after subsequent parturition. The only operation which has withstood this test, practically without exception, is some form of the Alexander-Adams operation of shortening the round ligaments.

The round ligaments, being a part of the musculature of the uterus, grow with it during gestation and undergo involution with it after parturition, thus maintaining their function. None of the artificial ligaments can undergo normal involution. This operation, then, is a physiologic operation, so to speak, whereas all other methods of operating which have been devised for this condition are unphysiologic—they substitute one bad condition for another, although the second condition may be less objectionable than the first.

The Alexander-Adams operation, as originally performed, is applicable only to uncomplicated retrodisplacements, because without entering the abdomen it is practically impossible to break up adhesions, and utterly out of the question to remedy any surgical affection of the adnexæ.

The operation so persistently and consistently exploited by A. Goldspohn, of Chicago, modified by opening the abdomen through the dilated internal inguinal rings and breaking up adhesions or examining and treating the adnexæ, has the disadvantages that it requires a greater amount of time and energy than should be necessary to fulfill the indications, that it is a more extensive operative procedure than is required, that it increases somewhat the danger

of the occurrence of hernia, that it is difficult to work through these inguinal openings, and that some of the conditions complicating retrodeviations can not be adequately and safely treated through such limited openings. Nevertheless, this is the operation which I employed in nearly all cases during the last ten years. It is applicable in the great majority of cases, either simple or complicated, and was the best operation I knew of. Yet I was fully cognizant of the objectionable features.

Recently I learned of an operation which approaches very near to the ideal. I refer to the operation devised by David T. Gilliam, of Columbus, Ohio. It is a modification of the Alexander-Adams operation. The essential features of the Gilliam operation are these: An incision down to the aponeurosis is made in the median line, as for a ventral suspension operation; the adiposus is slid back from the midline to or beyond the outer border of the rectus muscle on each side; the incision in the linea alba is then continued into the abdomen; if complications are present they are treated; then the skin and adiposus are held back with retractors while the deep tissues of the abdominal wall, from the anterior surface of the aponeurosis of the external oblique muscle inward, are penetrated with a ligature carrier or other instrument, the round ligament grasped at about its middle, pulled through, doubled upon itself to the surface of the aponeurosis and anchored to it with chromicised catgut or fine silk. The ligament may be brought out at a point as near the internal inguinal ring as may be desired, but it will serve the purpose if brought out through the rectus about on a level with the internal ring, and this is, of course, a little easier to do than to anchor it further outward. This method is simple, easy of execution, eliminates the weakest portion of the ligament, is applicable to practically all cases needing operation, fulfills all the indications for shortening the round ligaments, and does not substitute one abnormal condition for another. If necessary, the uterosacral ligaments can also be shortened in just a few moments. I have had but one opportunity to operate by this method.

Intraabdominal shortening of the round ligaments by doubling them upon themselves or by exsecting portions of them and anchoring the stumps of the distal ends to the uterus and all similar procedures are objectionable for the reason that the strongest portion of the round ligament is shortened, leaving a weak and inefficient anchorage within the inguinal canal.

George H. Noble, of Atlanta, devised an operation very similar to the Gilliam operation, but it has a more complicated technic and has the great objection that the aponeurosis is cut transversely.

It has been so well established that the Alexander-Adams operation, when properly performed, has yielded satisfactory permanent results which withstand the test of pregnancy in practically all cases that it would be supererogation to dwell upon this point. What are the facts regarding the results of the ventral suspension and fixation operations? Noble collected statistics of fifty-six pregnancies in suspension and fixation cases from American operators. Gordon, of Baltimore (1896), collected 175 pregnancies in the same class of cases from European statistics. Among these 231 cases were twenty-three abortions (10 per cent) and nine premature labors (4 per cent). The complications were thirteen artificial extractions, including forceps deliveries (5.6 per cent); five versions (2.16 per cent); three cesarean sections (1.3 per cent); three deaths, including a Porro operation by Noble (1.3 per cent).

These statistics are sufficient to condemn this kind of operation during the reproductive period.

Vaginal fixation yields, I believe, even worse results, to say nothing of its other disadvantages.

Some eight or ten years ago I performed ventral suspension in three or four patients in their reproductive periods and subsequently attended two of them in parturition. The first, a primipara, got on in her labor very well, excepting that there seemed to be an added pain. The other, a multipara, had dystica. Version became necessary owing to the os being close to the sacral promontory, and the child was lost. The anterior wall of the cervix thinned to such an extent that I poked a finger through, thinking

it was the bulging membranes, but subsequently succeeded in finding the anterior margin of the os close to the promontory.

Neither of these patients experienced undue trouble during gestation, and in both the uterus remained in place after the puerperium. Catgut was the suture material used.

While I have treated many scores of cases of retrodisplacement of the uterus, I have available the records of only thirty-six. However, the results in this small number of cases are of some interest. Of these thirty-six cases seventeen were treated successfully with the pessary, though some of them were not traced long enough afterward to insure that the relief was permanent. In fourteen cases the Alexander-Adams operation was done, with permanent relief in all, though in my first case (1891) the anatomic result was not perfect during the year the patient remained under direct observation, probably owing to adhesions. The relief from symptoms was perfect and remained so for several years to my knowledge. In five cases of ventral suspension the anatomic result remained good after one to four years, no effort to trace them beyond four years having been made. In four of them relief from symptoms was practically complete, while the other was almost a complete failure. In this case the lacerated perineum was not repaired, nor was the uterus suspended by the posterior surface of the fundus—the best way. Several of the operation cases had been treated by me with the pessary unsuccessfully, and in these I often found the inguinal portion of the round ligament drawn out to a mere thread. In six (40 per cent) of the Alexander-Adams operations I found it necessary to do intraabdominal work (resection of ovaries, salpinjectomy, appendicectomy, separating adhesions), and in four (26.6 per cent) cases plastic work on the cervix and perineum was done.

THE SUPERIOR MERITS OF A MODIFIED UTERO SUSPENSION FOR THE CORRECTION OF UTERINE DISPLACEMENTS.

RUSSELL CAFFERY, M. D., SAN ANTONIO.

The work of the conservative gynecologist has to do principally with the so-called minor complaints, and most prominent among them being the retrodisplacements, version, flexion, and prolapse of the uterus. The problem of how to successfully combat these distressing conditions without impairment of the reproductive capacity of the patient is uppermost in my mind, and the title of this paper expresses the results of my efforts in that direction.

I am not claiming originality for my work, for the credit of the idea properly belongs to the immortal Tait, of England, while the elaboration of it was left to others. The French were probably the most enthusiastic adherents of hysteropexy and have done much to perfect the operation. It is advocated in this country in a lukewarm manner by many surgeons and is condemned by some. This antagonism must result from prejudice, for a more thorough acquaintance with the operation would be calculated to convince one of its greater utility.

You will be warned that the future parturient woman who has been subjected to this operation is especially prone to various mishaps, but it will be found with some exceptions that the same accidents occur with a relative degree of frequency in women who carry their wombs resting upon the pelvic brim. I can now recall four of my cases whom I subsequently confined without an accident. I have employed the operation twenty-two times, and without reservation declare the results to have been most satisfactory in my hands. It was done strictly for the correction of symptoms, and, in properly selected cases, it has the peculiar distinction of

doing what it sets out to do, which is more than can be said of most of the plastic operations upon the female genital tract. It has its ideal application in those cases of version and reflexion accompanied by the second degree of prolapse when the patient loudly calls for relief from constipation, painful menstruation, sensation of weight and dragging in the pelvis, radiating pains down the thighs and hips, vesical and rectal tenesmus, and lastly, but not least, constant backache. The latter symptom, in my opinion, is due to traction upon the ureters, since their peculiar anatomical relation to the uterus involves them at once in the descent of that organ.

The technic differs little from some of the text-book outlines, and briefly is as follows: The patient is prepared for an abdominal section, and under chloroform anesthesia linear incision in the rectus muscle (preferably the right) is made, the peritoneum incised, and the uterus located, adhesions, if any, are freed, and appendages treated without sacrifice, if possible. With the aid of an assistant's finger in the vagina the uterus is brought upward and forward, where it is grasped at its fundus by a strong volcella and held. Silver wire stitches are used for closing the wound and are placed in the upper and lower angles first, the two middle ones are inserted in the ordinary manner, except that they are made to include the anterior surface of the uterus at a point a half inch below and to the inner side of the origin of the tubes. They constitute the retaining sutures and are drawn tight and twisted with the others. If it is desired to establish very firm adhesion at this point, presumably for correcting an obstinate prolapse, the peritoneum is forced back on each side and the uterus brought in contact with the muscle surface itself. The vagina is firmly tamponned with sterile gauze and the patient put to bed for twenty-one days. The stitches are removed about the sixteenth day, and the vagina firmly tamponned on alternate days for several weeks following. Out of the total number of cases so treated there were no fatalities, and subsequent hernia is unknown. I am alive

to the existing and probable disadvantages of this procedure, but, until some more safe and efficient means has been devised for the correction of backward and downward displacements of the uterus, I shall continue to practice this operation.

TROUBLESOME DIAGNOSES IN ABDOMINAL WORK, WITH REPORT OF CASES.

F. L. BARNES, M. D., TRINITY.

Medical literature of today is replete with reports of correct diagnoses in difficult cases and of successful operations for every operable condition, but there is a noticeable dearth of reports setting forth faulty diagnoses and unsuccessful operations. This is probably owing to the fact that we are elated by success and want to tell others how they may likewise succeed, while failure fills us with fear lest we find that we alone could have made a mistake, or perhaps lest the man of many years and much experience tells us how by using some other means or methods we would have made some other diagnosis, or how by pursuing some other course our results would have been more satisfactory. This information, however, is exactly what we want and what we hope to get in abundance by making these reports.

Case No. 1.—The first case came to me in April, 1900. Her father made the statement that he had recently left his home in a small town in Mississippi because of the neighborhood talk about his daughter being pregnant. She was a girl 16 years old, and very much emaciated, but of good color, and very large abdomen. The history she gave was that she had menstruated from the age of 12, and had been a very fleshy, strong girl. Her abdomen began to gradually enlarge when she was about 15 years old, she lost flesh very rapidly, and her menses became suppressed. She was then moved about from place to place, and passed through the hands of several physicians, and on several occasions the abdomen was tapped, always with the removal of a great quantity of fluid, but the abdomen would refill very rapidly. When I first saw her the abdomen was very much distended and tense, fluctuating in every

line with dullness everywhere except small space in each flank. There was considerable tenderness over the region of the liver, and she was having frequent attacks of pain characteristic of biliary colic, which would last until relieved by opiates. The base of the chest was bulging, and her breathing was short and difficult, to relieve which I tapped the abdomen and removed seven gallons of fluid characteristic of ovarian cysts. Two weeks from this time I operated and removed an ovarian cyst containing eight gallons of fluid and weighing in all ninety-five pounds. Projecting within the cavity of the cyst were a great many smaller cysts and several large fibrous tumors; one of the latter was adherent to the under surface of the liver and gall bladder, and exerting pressure on the cystic duct, obstructing the outflow of bile; this evidently gave rise to the attacks of biliary colic which had been vaguely attributed to pressure previous to the operation. These large, hard, fibrous masses had not been made out before the operation, because of the fact that, before tapping, the abdomen was too full and tense to palpate, and after tapping it was necessary to apply a tight bandage, which was also in the way of palpating. This patient made an uninterrupted recovery, and went home in four weeks weighing sixty-five pounds, or thirty pounds less than the cyst.

Case No. 2.—Was called hurriedly to see Mrs. J., four miles in the country. Found her prostrated and suffering severely with a cramp-like pain beginning at McBurney's point and extending upward toward the kidney and inward toward the umbilicus, When the pain would become very severe, which was about every ten or fifteen minutes, with considerable regularity, she would become nauseated and vomit. Temperature 98, pulse 110. There was considerable tenderness and rigidity over the right side of the abdomen. Up to this time she had felt perfectly well, and the kidneys and bowels had acted freely and normally that morning. The attack, consisting of pain, nausea, and vomiting, and prostration, came on very suddenly while she was in the yard preparing to do her family washing. A tenta-

tive diagnosis of appendicitis was made, and she was given small doses of calomel followed by epsom salts to clear out the alimentary canal, while the pain and shock were somewhat relieved by hypodermics of morphin and atropin. No nourishment was allowed for forty-eight hours. On night of the first day, temperature was 102, pulse 110; suffering intensely except when under the influence of opiate. During night bowels and kidneys acted freely. Second morning temperature was 102, pulse 110—still suffering. Operation advised, but rejected. Second night, temperature 103, pulse 118; consultation called, diagnosis confirmed, operation again advised, but put off. Following morning, temperature and pulse about the same, patient delirious, general appearance bad, abdomen somewhat distended, especially on the right side; family sought operation as last resort, and, while the preparations for operation were under way, the patient awoke with a sudden cry and immediately thereafter passed a large quantity of foul-smelling urine and blood and a small, hard, flat stone. The diagnosis was made, and it is useless to remark that for a thing of this kind to happen among some of the laity is to give surgery a "black eye." Taking a retrospective view of the case, I believe that it would have been correctly diagnosed had the preparation for the operation proceeded far enough to anesthetize the patient, otherwise an examination under anesthesia would not have been thought necessary. I am satisfied that a diagnosis could have been made by making use of the ureteral sound with Kelley's wax tips, but the symptoms were so clearly those of appendicitis that it would not have been deemed necessary to sound the ureter, had the proceeding been practicable under the conditions. Doubtless the stone had been in the ureter for some time, but had never occupied a position to completely obstruct the channel until just before the onset of the attack already described, and which position it maintained until the pressure of the accumulating urine was sufficient to force it into the bladder. This patient was a large, fleshy woman, with thick abdominal walls and very much afraid of being hurt, which conditions may have operated somewhat against making a correct

diagnosis. If the obstruction in the ureter had not been absolutely complete, or the obstructing body so fixed, the composition of the urine or character of the pains might have led to a correct diagnosis. She had never had before nor has she had since this attack any symptoms of gravel or calculus. Vaginal examinations in this case made by both Dr. Vann and myself revealed nothing.

Case No. 3.—Mrs. T., age 38, mother of four children; youngest six years old. Menses have been normal for last two years. Last menstrual period came on December 6th, lasted three days, and was normal in every particular. The discharge returned on December 12th, but was without odor or pain except at night after a hard day's sewing she would have pain in left ovary. December 29th she started to a near-by town in a buggy—when about two hundred yards from the house she was attacked with a sudden severe pain resembling uterine colic; she returned home and went to bed, and her husband, who was a physician, gave her five grains antikamnia; she got up next day feeling very well except pain in her side. About January 2d the uterine discharge began to have an offensive odor and continued to so have until January 8th, when her husband decided that it was a case of incomplete abortion and performed a curettement for its relief; nothing was revealed by this curettement except that the mucous membrane bled very easily and freely and that the uterine cavity was very much elongated, measuring about eight inches. Up to this time, January 8th, her pulse and temperature were normal; had slight chilliness on January 11th, after which temperature ranged from 100 to 102. On January 15th I was called in consultation to see the patient, and elicited the history as already indicated, and in addition made a vaginal examination, which revealed an enlarged and extremely tender uterus and a large, hard mass posterior to the uterus and extending well up into the left broad ligament; there was no intervening space between the uterus and this mass, either posteriorally or laterally, and neither was movable. The patient made the statement that for two or three months she had experienced trouble in moving the bowels on account of something seeming to get in the

way. Taking this statement into account with the continuous painless hemorrhage, the elongated uterine canal and the fever following in three days after the curettement, we decided we were dealing with a fibroid tumor, the bed of which had been torn into and infected by the curettement on January 8th; and, with a view to establishing better drainage and hoping to defer any serious operative interference until the general condition of the patient (which was very bad) could be improved, we again dilated the cervix, performed a light curettement, with a dull wire instrument, irrigated the cavity with 1:4000 bichloride solution, and packed with iodoform gauze. The venous hemorrhage produced by this slight operation was terrific. Her condition continued to grow worse, and in three days a well-marked case of peritonitis had developed; when, owing to the fixed condition of the uterus and the high position of the tumor, it was decided to do a laparotomy. The incision was made in the median line; the omentum, which was enormously thickened, came into view, and, on being lifted up and pushed out of the way, a great quantity of blood and necrotic tissue gushed out. A little further examination revealed that the true diagnosis was extra-uterine pregnancy. The adhesions being so dense and the dangers of spreading the infection so great no attempt was made to remove the tube. The sac was thoroughly wiped out and drained with gauze. The patient made a satisfactory recovery.

In this case I believe that the tubal pregnancy was infected by the first curettement, or, at any rate, it became infected about that time, and that the traction made on the uterus in second curettement disturbed the adhesions existing between the sac and omentum and produced the peritonitis. This opinion is based on the fact that it was only necessary to lift the omentum off to liberate the contents of the sac, and the edges of the opening were very old and black.

In concluding the case, I desire to state that the question of tubal pregnancy was liberally discussed in consultation, but was thought not to exist, because there were present no signs whatever

of pregnancy—the tubal pregnancy had not advanced far enough for the uterine discharge to be characteristic; in brief, the signs and symptoms seemed to be clearly those of an infected myomatous uterus, and the diagnosis was so made.

Case No. 4.—Mrs. R., age 35 (twin); married ten years; no pregnancies. Family history: Mother in good health at 60 years; father died of acute meningitis at 29. No history of consumption, cancer or syphilis. Patient was in good health until 19 years old, when she had an attack of measles, which left her with a rhinitis, which later caused the loss of the septum and bones of the nose. In 1885, while under treatment for this trouble, she had a severe attack of intestinal colic for which she was given calomel and was badly salivated, in consequence of which she lost her teeth. This colic lasted three days and was followed by fever lasting three weeks, during which time there was great soreness all over the abdomen. Began menstruating at 14 and was normal until attack of measles, at which time the menstrual period was very much prolonged, since this time she has menstruated every two weeks, and some pain has preceded each period two or three days. During last four years these pains have been very severe and of a labor-like character, there is always great tenderness and some fever following these severe paroxysms.

In July, 1903, the enlargement in left side became very noticeable and has increased very rapidly since. Patient has lost flesh very rapidly (about forty pounds) in last two months, and at present, January 18, 1904, is very much emaciated, but of good color; pulse 120, temperature 97½. Physical examination reveals a very much distended abdomen, though not especially tense, fluctuating in all lines, dullness everywhere except in flanks. An oblong, hard body can be palpated extending from a short distance above the umbilicus outward and upward toward the spleen. It has a sharp nodular lower edge and several hard angular processes extending in various directions. By bimanual examination it was easy to make out the cystic condition of both ovaries, and the large, hard mass in the upper portion of the abdomen gave the impression

of being a part of these ovarian growths, and suggested some malignancy in connection therewith.

The patient was operated on on January 25, 1904, when it was found that she had five cysts of the left ovary and one of the right. One large cyst had ruptured at some previous time, and its contents were poured out among the bowels. The bowels were considerably irritated and were covered with little red points, but, so far as I have been able to learn, the fact of its rupturing had caused no other trouble, unless a severe attack of diarrhea about six days prior to the operation might be attributed to that cause.

In addition we found a sarcoma involving the whole structure of the omentum and densely adherent to the intestines and parietal peritoneum. The growth was not disturbed because of its numerous adhesions and the fact that the transverse colon would have had to be resected—an operation not justified under the conditions. The cysts were easily removed, and strange to say, while the sarcomatous omentum rested heavily upon them they were not at all adherent.

During the time I observed the patient (from January 18th to 25th) her pulse was 120 in the forenoon, temperature 96; pulse 130 in the afternoon, temperature 97½. After the operation her temperature never rose above 99, and after the first week it dropped to 96 in the forenoon and 97½ in the afternoon, and so continued as long as I observed her. She recovered from the operation and went home in four weeks feeling much more comfortable on account of the increased amount of intra-abdominal space.

Before closing this paper I want to add that exploratory incisions of the abdomen are frequently necessary for diagnostic purposes; and, furthermore, that our abdominal operations are often more exploratory than we intend. Exploratory incisions under the proper conditions and precautions are entirely justifiable and ought to be made. A surgeon should not open an abdominal cavity for any purpose except in cases of great emergency without being prepared to deal properly with any condition he might meet.

TUBERCULOSIS OF THE UTERUS AND ADNEXA.

J. E. GILCREEST, M. D., GAINESVILLE.

Tuberculosis did not until recently especially interest the surgeon and gynecologist, but now it covers a large field in surgical pathology. In fact the surgeon has much more to do with the disease today than the physician, about one-fourth of his work being on tubercular patients. The inoculability of tuberculosis was discovered in 1826 by Laennec, who received the infection in an injury to his finger while making an autopsy on a tubercular subject. He finally died of phthisis.

In 1865 Villemin demonstrated experimentally the possibility of transmitting the disease from man to the lower animals, and, after this, numerous experiments followed. The recognition of the characteristic giant cells and epithelioid cells of tubercle, and the tendency of tubercular masses to invariably undergo cheesy degeneration, was a source of light to the investigators at that time.

But the discovery by Koch in 1882 of the bacillus of tuberculosis fairly revolutionized surgery.

According to Winchel, tuberculosis of the uterus and adnexa occur in about 1 per cent of all autopsies held for tuberculosis, but some writers think it occurs much more frequently.

Historical.*

Cases.—On May 14, 1900, I operated on L. F., colored, age 21, mother of one child, 1 year old. She had been in bad health since her confinement. When I examined her a few days before operating, I found her somewhat emaciated, temperature 100, pulse 90. The abdomen was enlarged, and a distinct tumor could be felt, which filled the pelvis and extended above the umbilicus, consider-

*An extended historical review of "Tuberculosis of the Uterus and Adnexa," with bibliography, omitted by Committee on Publication.

ably larger on the left side. It had a firm, elastic sensation to the touch, and near the upper part there was slight fluctuation. The uterus was pressed down low and surrounded by the mass of adhesions. I had several of my colleagues to examine the patient, and we all thought it was most likely a multilocular cyst of the left ovary with considerable exudations and adhesions. Dullness extended all over the anterior part of the abdomen below the umbilicus. When the peritoneum was opened, fluid escaped, and I thought I had opened the cyst, but it soon ceased flowing, and, when the incision was enlarged sufficiently to examine, I could see many small cysts walled in between the small intestines. The omentum and bowels were covered with tubercular deposits. I broke up the adhesions and emptied all the cysts I could find. The tubes, ovaries, and uterus were covered with deposits, but not much enlarged. I flushed the abdominal cavity with two gallons of hot normal salt solution, and closed without drainage.

The patient made a slow recovery, was able to walk around in about six weeks, and has been quite well ever since; menses regular and normal, appetite and digestion good. I examined her a week ago, and find the uterus almost immovable from adhesions, but no enlargement of the abdomen or indication of return of the disease.

In July, 1902, I was called to see W. M., colored, age 24, married five years, no children or pregnancies, family history good. She had always been healthy and strong, menses regular till January, 1902. She missed six months and noticed the abdomen enlarging, she thought for awhile she was pregnant till examined by a physician who told her she was not, and would need an operation to remove a tumor. When I examined her the abdomen was as large as a seven months' pregnancy, but was very much like a unilocular ovarian cyst. She had felt quite well all the time, kept her flesh, and had a good appetite, no elevation of temperature or acceleration of pulse. I diagnosed ovarian cyst and operated on July 5, 1902. When the abdomen was opened, about one quart of transparent fluid containing white, flaky matter escaped. This cyst was formed in the center of the lower part of the abdomen, extending

into the pelvis behind the uterus and walled in above and at the sides by adhesions between the bowels. The tubercular deposits were as thick as if a shower of white seed had fallen over the peritoneum, bowels, ovaries, and uterus. The treatment was the same as in the first case and the woman made a rapid recovery, but had some enlargement to commence about the third week and continued for two or three weeks, like reaccumulation of fluid, but it gradually disappeared and she has enjoyed good health ever since.

Miss C., age 18, was in the graduating class of our high school in 1903. She had felt badly for about three months before she was taken very sick. On May 10th I was called in to prescribe for chills. Her sister stated that she had been having light chills for some time, and that she had a hard chill that day and had high fever, but had been up till noon taking an examination. I prescribed, but the next day she had another chill, and I was called to see her; I found her temperature 104, pulse quick and complaining of hurting all over, but did not complain of any trouble in her bowels. I prescribed again, thinking it was due to malaria. I saw her again the next night. Her fever had continued. I was informed that she complained of a hurting when her bowels moved. I made a rectal examination, and could feel a large fluctuating tumor behind the uterus, and, by percussion, could elicit some dullness, tenderness, and swelling in lower part of abdomen.

She gave no history of any pelvic trouble, menses had been regular and normal. She had been healthy and strong until recently. Her mother died of pulmonary tuberculosis some six years prior to this time. On May 14, 1903, I opened through the cul-de-sac of Douglas into the abscess and evacuated over a pint of pus; there was not much odor to the pus and it was rather thin and milky, but I did not have it examined or think of tubercular trouble. I thought the abscess had come from the appendix. She did quite well for a few days. I kept the abscess washed out and used gauze and rubber drainage tubes in the opening. In about a week her fever commenced rising in the evening. Her bowels continued full and tampanitic all the time. June 10th I noticed

a little swelling over McBurney's point, which continued to enlarge, and, on June 14th, I made an incision through the abdominal wall and found pus but no appendix in the abscess cavity. I washed this out and used a rubber drainage tube and gauze to drain the wound. She had a rather profound shock from the operation, but rallied over it in about twenty-four hours, but never improved much. In about three weeks the bowel ulcerated into the wound, and the feces would pass through both wounds. This continued about six weeks and she died. The bowels remained distended all this time, although they would move freely. On post-mortem the appendix had disappeared, and there was a large ulceration in the cæcum where the base of the appendix should be. The peritoneum, bowels, tubes, ovaries, and uterus were covered with tubercular deposits. The tubes were very much thickened and uterus slightly enlarged. Her symptoms for the last six weeks had shown signs of general tuberculosis. She coughed considerably, and had crepitation and dullness over apex of her right lung, but it was not examined after death. My conclusions were that this commenced as a tubercular disease of the appendix and the abscess in the beginning was tubercular, but became infected by the bacillus coli communis. Had an early diagnosis been made, the abdomen opened and appendix removed, the girl's life might have been saved.

The most interesting part of this subject is the great difficulties in the etiology and diagnoses. Osler has said that about half the cases operated on were diagnosed after the abdomen had been opened expecting to find some other trouble.

Modes of Infection.—Undoubtedly, the general opinion is that the tubercle bacilli enter most frequently from above and seldom ascend. According to Voigt, coitus by a tubercular male may transmit the disease to a healthy female. While this seems possible, Murphy says he has seen so many cases of tuberculosis of the epididymis with tubercle bacilli in the seminal discharges and urine in married men without the wife becoming infected that he must conclude that other conditions are necessary for the develop-

ment of tuberculosis in the female genital tract. Dieulafay believes the intestines are the most frequent source of infection, where they have been introduced in sputum or food. Dobroklonsky has shown that the bacilli are capable of passing through the walls of the intestines without a primary lesion of the bowel and thus reaching the peritoneum without leaving any trace of trouble at the atrium of invasion, as it does in the pharynx, to affect the cervical glands. Other sources are the blood current, lymph current, especially from the mesenteric glands. Kelly believes the influence of pregnancy and parturition has not been sufficiently recognized.

Symptoms.—These may be very slight or serious, according to the nature of the affection. In acute cases where the tubes and peritoneum are the seat of the disease, there is often marked pain in the pelvis and lower abdomen, also rises in temperature and gradual emaciation. These symptoms do not always follow, as one of my cases in which the lower part of the abdomen and pelvis were covered with tubercular deposits, adhesions, and enlargement enough to resemble an ovarian cyst without any pain except on exercise. The general health may continue good and the history be negative. Kelly says pain on urination is one of the most characteristic of all symptoms. My observation has been the same.

Diagnosis.—The symptoms that are most reliable in tuberculosis of other organs often fail us here. The healthy appearance of the patient and the good history will often throw all suspicion from the mind of the physician not specially familiar with the disease.

Lohlien gives an account of his experience at the gynecological clinic at Giessen. He states that the majority of his cases were sent in by the family physician with a diagnosis of tumor or ovarian cyst.

In the chronic form the temperature is often subnormal. In the early stages Edebohl speaks of plague-like thickenings of the deep parts of the abdominal parietes as being signs of great value in the early diagnosis of tubercular peritonitis. They impart to the fingers, he says, the sensation as if the peritoneal surface were

occupied by urticaria wheels of various sizes, from one to eight centimeters in diameter. They may be quite numerous, or but two or three found scattered over the anterior and lateral walls. He thinks they are caused by hyperemia and swelling of the subperitoneal connective tissue. The history of chills and fever and the patient stating she has malaria will sometimes deceive us. If the uterus only is affected, we have the usual symptoms of endometritis. An early and correct diagnosis can only be made by examination of the uterine scrapings, which would be advisable in all curettement, if possible.

When young girls are attacked with profuse leucorrhea, and resist all local and constitutional treatment, our suspicions should be aroused, and a careful examination made of the discharge. If no tubercle bacilli are found, the next step would be to curette the uterus and examine the scrapings. The vaginal discharge after the menopause should have the same careful attention, as tuberculosis of the uterus in the early stages is usually curable, but very serious if allowed to go untreated. Where the disease originates in the tubes, the ordinary symptoms of salpingitis are first noticed, followed soon by attacks of pelvis peritonitis.

Treatment.—The treatment of tuberculosis of the uterus and adnexa should be as conservative as sound surgical principles will permit. If the uterus alone is the seat of trouble, a thorough curettement and cauterization of the cavity should be done, if an early diagnosis is made. If there should be a recurrence of the disease, a panhistorectomy would be advisable. If the tubes are the seat of infection and are found much enlarged with the ends closed, they should be removed, but the uterus and ovaries left if not diseased.

Where the tubercular deposits only cover the peritoneal surface of the uterus and tubes, recovery usually follows by opening the abdomen, breaking up adhesions, flushing with hot normal salt solution, or mopping out the cavity and closing without drainage. There have, no doubt, been many cases lost by putting in drainage, which allowed a mixed infection to enter.

HYSTERECTOMY—A CONSERVATIVE SURGICAL OPERATION WITH REPORT OF CASES.

J. W. KENNEY, M. D., SAN ANTONIO.

The existence of the gynecologist is dependent upon the existence of uteri. Hence the interest felt in that organ by those who practice that specialty. The word conservatism is often used in medicine and surgery to express the opposite of operative procedures. If one accepts such a definition, he can not speak of an hysterectomy as being conservative, for certainly excision of the uterus is not preserving it—not in its natural state, at least. If we take a broader view of the subject and consider it conservative to remove a womb when there is more to be gained than lost in so far as the welfare of the patient is concerned by such excision, then hysterectomy can be classed as a conservative procedure. It is in this broader sense that my remarks shall be made.

It is difficult to conceive that an operation so beneficial and well understood at present could have been for so long a time from its conception and successful accomplishment a common scoff and jest in most scientific courts. Those who derided such operators as adventurers and mad men have of late years been making amends for this contumelious treatment by effacing the remembrance of those remarks by adulations.

The indications for the excision of the uterus from a conservative surgical standpoint are: (1) malignant disease, (2) fibroid tumors, (3) chronic infectious endometritis, (4) aggravated cases of prolapsus, (5) serious affection of the mind and nervous system by reflex irritation.

In cancer our only hope is to prolong life and add to the comfort of the patient. The return of the disease almost invariably takes place. In chronic infectious endometritis by an hysterec-

tomy, if done in time, we can save the uterine adnexa and parametrium from invasion by the gonococcus and pus-forming germs. Fibroid tumors call for the operation when hemorrhage is profuse, pregnancy supervenes, or when the pressure symptoms become troublesome. Aggravated prolapsus uteri is relieved more effectually and with as little danger by hysterectomy as by any other operation. The use of supports and the attendant discomfort of the patient justify the operation while the predisposition which such uteri have for more serious disease demand their excision. When the mind and nervous system are seriously affected by reflex uterine action, it is truly conservative to relieve the patient of the offending uterus, thus brightening her life and making her a useful member of society. The gratitude of such patients is in every instance unbounded.

The preparation of the patient should be conducted in such manner as to best enable her to successfully stand the operation. To do this, the mental and nervous system is to be considered along with the physical. Therefore, in our zeal for asepsis, we should not do anything that will increase the fear or dread naturally incident to the performance of any major surgical operation. This fear can often be materially lessened by the manner in which the nurse prepares the patient. The shaving of the hairy part is often done in a most barbarous manner. Few nurses become expert with the razor, and the manner in which this little operation is done often terrorizes the patient. This can be avoided by the use of chemicals to dissolve the hair. Small doses of an opiate will add very much to the comfort of the patient and materially lessen their fear and should be given when needed. A proper appreciation of these facts will lessen the number of sudden deaths after the administration of a few whiffs of the anesthetic.

In addition to the usual technique followed for the purpose of obtaining surgical cleanliness, it has been my custom to wash the field of incision with pure carbolic acid; the caustic effects of the drug being prevented by the liberal use of alcohol. This most effectually destroys the staphylococcus opidermidis abla, our chief

enemy in such work. The length or position of the incision is regulated by the disease prompting the operation. It is immaterial whether the abdominal or vaginal site is chosen. The peritoneal cavity is opened. When first entered, this cavity is like the new-born healthy animal, free of bacterial life. The future well-being of our patient depends as much upon the entrance into and multiplication of bacteria in the tissues lining and contained within the boundaries of this cavity as upon the removal of the morbid uterus which prompted the operation. It is of first importance to bear in mind that the character and intensity of a septic or inflammatory process depends upon the nature of the invading organism —that handling these tissues damaged them, and that damaged tissue is predisposed to bacterial invasion and infection. It is also well to bear in mind that the lymph vessels of the deep layers of the peritoneum are in constant communication with the abdominal cavity, and that there is a continual transudation of lymph into the abdominal cavity and absorption of that already there by these lymph vessels and those of the greater omentum. This current is continuous and is the chief carrier of infection. It is not only a rapid carrier of infection, but likewise an excellent culture media for most bacteria.

After sepsis the chief danger incident to an hysterectomy is hemorrhage. This is controlled by ligature, clamp, and angiotribe. A combination of them all is desirable in most instances. My experience teaches that it will not do to trust the angiotribe alone. It holds the same place in hysterectomies that the pins do in bloodless hip joint amputations with these additions: it unites by compression the peritoneal coats that would otherwise be left gaping at the site of incision along either side of the pelvis. This renders unnecessary the long continuous suture otherwise needed in order to cover these denuded surfaces. The large vessels are also made plainly visible by this compression, and each individual vessel can be easily caught and tied, thus doing away with the ligation of large masses of tissue with the vessels and the consequent dangers incident to the absorption of such masses. By the use of

this instrument an abdominal hysterectomy can be rendered practically bloodless, and likewise much time can be saved, points worth considering when operating upon debilitated subjects. Ligatures should be limited to one on each of the large vessels that are too large to trust to the angiotribe. Being a foreign body, the least number possible of ligatures should be left within so active a lymph space as the peritoneal cavity. Clamps take the place of ligatures in an emergency or when it is difficult to securely tie any bleeding vessel. Before closing the abdomen, the pelvis should be cleansed of blood clots and shreds of loose tissue and left as dry as possible. Any abraded surface should be covered by peritoneum. Drainage, except that which will naturally take place through the opening in the vaginal vault, is unnecessary. The vagina being packed with antiseptic gauze causes all necessary exosmoses. If one is certain that his work has been complete, a drain will seldom be necessary, and it is a poor way of getting rid of a doubt, of getting rid of that possible something which should have been removed, but was not. In closing the incision, the simplest way is the best way. The through and through suture is most quickly applied, and, when removed, leaves the tissues free of foreign particles.

As a dressing for the external wound, a layer of bichloride gauze is placed next to the skin. This is covered with a pad of absorbent cotton, the whole being held in place by adhesive strips. The use of powders, etc., in the dressing of the incision has been discarded in my practice. They have never seemed of any benefit, while, on the other hand, they cause an aglutination or crust to form about the wound which is painful to remove and usually leaves a raw surface. The use of a broad bandage around the abdomen after abdominal hysterectomy has also been discarded. They are hard to keep in place, uncomfortable for the patient, especially in warm weather, and troublesome to remove and apply.

In the after-treatment of patients, their welfare and comfort are the only considerations. The latter no less than the former when it is not injurious. With this end in view, patients should be allowed

to move or be moved gently from side to side whenever lying in any one position becomes painful. The stomach should be kept as empty as possible until the nausea from anesthesia ceases. Bowels should be moved on third or fourth day, preferably by enemata. Strong purgatives should not be given per os. A too frequent movement of the bowels is harmful, as it irritates and causes them to move about in the abdomen, thus aiding in the extension of any inflammatory process that may be there. Affections of serous sacs are mostly due to disturbances of the organs which they contain, and the peritoneum is not an exception to this rule. It is well, therefore, that the abdominal organs be disturbed as little as possible for several days after an hysterectomy. If gas has formed, it usually comes away with the enemata. If it becomes troublesome and necessary to remove it before time to give the enemata, the rectal tube acts most admirably.

Liquid nourishment is given when the stomach is in fit condition to receive it. More substantial food after the bowels have moved. The patient should not be allowed to sit up until the end of the third week, and then only for a few minutes at a time for several days.

In this operation, as in all others, simplicity should be a ruling point. An excess of instruments or assistants is dangerous. Every useless finger or instrument that enters the field of operation may be the carrier of woe to the patient and likewise the reputation of the operator. Conservatism is not hesitancy. All surgical operations, if intelligently done, are conservative; the object being in every instance to preserve a life or some part or function of the living organism. Patients seldom die from the operation, often do so without it, and sometimes in spite of it. In the language of Davy Crockett, "Be sure you are right, then go ahead." The result will be satisfactory to both surgeon and patient. The patients furnishing the cases which I shall report are selected to illustrate the points in my paper, and not because of anything unusually important connected with them.

Case 1.—An American woman, 38 years old, suffering with

cervical cancer, refused to be operated upon for three months, during which time she tried many remedies suggested by many doctors. Loss of blood became so great that she was colorless and unable to stand without support. Abdominal hysterectomy was performed in an almost bloodless manner with the aid of the angiotribe. Patient suffered practically no shock, and was able to leave the hospital during the sixth week in a much stronger condition than when she entered. During the operation, a small puncture was made in the bladder, which was closed with fine silk. Infection of incision took place, suppuration was profuse and virulent. This, however, quickly subsided. A little later her bladder began to trouble her, and I removed two stones, each with a piece of silk ligature for its nucleus, thus illustrating one of the evils that may arise from the leaving of foreign matter in the abdomen. At the present writing (eight months after the operation) there is evidence of the return of the disease, which was expected. The operation has, however, given her a much longer lease of life than she could possibly have had without it, and the agonizing pain was likewise much relieved.

Case 2.—That of a young woman with chronic infectious endometritis, which refused to yield to four curettements by three different operators. All manner of local treatment had likewise been tried. The characteristic discharge persisted, and the patient's weight dropped from one hundred and thirty pounds to eighty-five pounds. Vaginal hysterectomy was performed, with the result that this patient regained her lost weight and married in less than four months. Two years later she lost her life from an overdose of morphin taken to relieve the pain caused by some bichloride solution a friend had advised her to use on her face to remove freckles. In this case health and happiness were restored to the patient. There can be no doubt that it was truly conservative to relieve her of her diseased and likewise useless uterus.

Case 3.—That of a young married woman possessed of a pregnant myomatous uterus. The several years' worry over the tumor, coupled with the fact that her sister had died of uterine cancer,

had made this patient extremely nervous, and with the hemorrhage incident to such pathological conditions, had made her a physical wreck. The abdomen was opened, and the pregnant myomatous uterus removed together with one ovary, which was enlarged and cystic. At the present writing (two months after the operation) the patient is walking about, gaining weight, and the veil of despondency has been replaced by one of cheerfulness. One year of miserable existence and large quantities of ergot might have been saved in this case had the so-called conservative treatment been dispensed with and the more truly conservative hysterectomy performed twelve months before it was.

The leaving of at least one ovary is essential in these cases. If both are diseased, the least affected should be left, unless life is seriously endangered by so doing. I have never seen an ovary cause trouble after an hysterectomy.

A REPORT OF TWO CASES.

O. L. NORSWORTHY, M. D., HOUSTON.

These cases I report are interesting to me from the standpoint of internal medicine as well as a surgeon and gynecologist.

Case 1.—Mrs. W., white, and 20 years old; American born, and very fair blonde, five and one-half feet high, weighing ninety-six pounds; been married one year, no children or abortions.

Family History.—Mother and father living and healthy; has neither brothers nor sisters.

Previous health has always been good, except pain and nausea after eating and an increasing obstinancy of constipation within the past two years. Prior to the origin of this trouble she was in extra good health, and was living in luxury and happiness at home. Upon the advice of a friend in a boarding school, she began to force the ejection of the food from her stomach by inserting the finger down the throat to prevent the accumulation of flesh. This plan worked satisfactorily, and after a few months' practice of it she began to lose flesh and became constipated. After returning home, at her mother's request, she consulted a physician. The physician gave her a stomach pump and advised washing the stomach out every morning. With a more up-to-date knowledge on the prevention of flesh than her girl friends of the previous year, she returned to school, and continued the stomach pumping. The tube was used another year and until she returned home married.

I was first called to see this patient to relieve painful menstruation. She became hysterical before I came; on arriving found her in a comatose condition. Pressure over either ovary would arouse patient and apparently cause great pain. Later I was consulted in my office by this young woman, though very much against her will. The patient considered a physician's treatment unneces-

sary, believing the stomach pump would cure her. General appearance was that of marked emaciation. Lips pale, tongue furred, white and moist, conjunctiva clear. Muscles were very soft; pulse small and 80 per minute. The chief indications for treatment were nausea and pain in the stomach, vomiting of undigested food, constipation and dysmenorrhea, which conditions had been growing worse the last few months. I found heart, lungs, liver, and spleen normal. Stomach somewhat contracted and sensitive to pressure. Uterus, ovaries, and tubes normal. Urine a light straw color, specific gravity 1.010, otherwise normal. After a general interrogation and physical examination I failed to arrive at a diagnosis. After eliminating many stomach conditions, I interrogated more directly for gastric ulcer, and, in advising patient to notice for certain symptoms, I described them to her. I stopped the stomach tube, prescribed a laxative, and advised a light, semi-solid diet. Five days later patient reported she had vomited almost every meal with more difficulty than while using the tube; that several times she had vomited pure fresh blood mixed with the food, and that the stomach pains were sharp, acute, and well defined at a point from the stomach through to back. My questions at this visit were more descriptive of gastric ulcer, and at her next visit I was positive of my diagnosis, "gastric ulcer," I believed caused by the frequent and reckless use of a rather stiff stomach pump in the hands of an inexperienced operator. My treatment advised was fifteen days of absolute rest in bed, with positively nothing in stomach for ten days, except two ounces of distilled water every four hours. I advised a reliable trained nurse be in constant attendance. The patient offered many excuses, believing the tube would eventually cure her, and persistently objected to a nurse. The nurse was employed. High nutritive enemas regularly every eight hours, and a daily saline flush of the sigmoid were used. Stomach was irrigated daily with a 1 to 1000 solution of silver nitrate, followed by a bismuth solution through the tube. On the fifth morning patient asked for a private talk with me. Said she could not stand the treatment longer, and would confess there was nothing wrong with

her stomach. That she forced the vomiting, and had from the beginning of her complaint about two years ago. Claimed she learned the art of preventing fat in boarding school and that she soon discovered the pump an easy means of unloading the stomach at will, pretending to treat the disease according to the physician's directions. Liquids and light semi-solids were allowed and soon the patient recovered.

She now has no stomach trouble, and has become much improved of her dysmenorrhea and constipation, and has been pregnant since. She now is somewhat pale, and does not eat supper regularly for fear of accumulating flesh.

Two valuable points to me in this case are: (1) Do not ask leading questions until you are positive of the patient's sincerity. (2) Be very guarded in diagnosing stomach troubles in young women that are inclined to accumulate flesh.

Case 2.—Mrs. S., white, American born, 34 years old, and a fair blonde, five feet seven inches in height, weighing 210 pounds, of a nervous temperament, lived in a malarial country, the pine district of East Texas.

Family History.—Each member of the family is very nervous and hysterically inclined. Father committed suicide at the age of 43. Mother living; is 66 years old, and extremely nervous. Brothers and sisters are healthy, though very nervous. Patient favored father in form, habits, and disposition.

Previous History.—This patient had enjoyed good health, with the exception of irregular menstruation, until after the birth of the second child, which was four years ago. At marriage her weight was 136 pounds, five years later it was 210 pounds, an increase of seventy-four pounds, or fifteen pounds per year. Wealth and happiness was this patient's fortune in her home. Since the birth of the second child, there has been gastric disturbances, at times palpitation of the heart, and within the last two years the stomach has refused to retain the food. A prolapsed uterus was believed to be the cause of the troubles. The ejection of the food from the stomach was produced by insertion of finger down her

throat to reduce flesh. Forced vomiting immediately after eating was practiced at interrupted periods for about five years with a gradual increasing constipation and decrease in weight. The stomach acquired the habit of emptying itself shortly after eating through force of action, and finally would not retain any food longer than twenty minutes. Constipation became obstinate until the entire contents of a small bottle of syrup of figs, at a single dose, was necessary for relief, and finally croton oil was resorted to. During May, 1903, croton oil was administered to remove a two-weeks' accumulation of fecal matter. A hard fecal mass was passed with a collar about two inches in width surrounding it, followed by a profuse hemorrhage. Until October, 1903, stomach would scarcely retain anything, constipation was extremely obstinate, nervousness very much increased, and at times patient would appear almost insane. Weight and strength decreased rapidly as hemorrhages continued several times daily.

On October 1, 1903, patient consulted me for the correction of a supposed prolapsed uterus. She weighed ninety-four pounds, and could scarcely stand on her feet; much emaciated and anemic in general appearance, conjunctiva slightly icteric and pupils glaring, tongue thickly furred, flabby, and pale, and gums pale. Temperature 97⅘, pulse 60 per minute. Slight puffiness under eyelids and around ankles.

Physical examination proved the lungs, liver, and spleen to be normal, the heart dilated. A large, diffusable anemic murmur could be heard with the first sound over the entire chest. Stomach was very much contracted. A sausage-like mass, firm and quite painful to pressure, could be felt in left hypogastric region, about the junction of descending colon and sigmoid. Perineum normal, vagina capacious and relaxed, and cervix lacerated. Uterus was low and small with a fibroid the size of a pigeon's egg on left cornua. Tubes and ovaries normal. No leucorrhea, nor had the patient menstruated for several months. The bladder was normal. Urine normal, except 1.010 specific gravity. Afferent and efferent nerves functioning normal. By the use of an illuminated sigmoido-

scope I was not able to discover anything abnormal through the rectum.

Diagnosis.—A probable malignant growth of colon or upper sigmoid. The report made by the pathologist of the University at Galveston reads as follows:

"PATHOLOGICAL LABORATORY OF UNIVERSITY OF TEXAS.

"No. 136. "GALVESTON, October, 1903.

"A specimen received October 9, 1903, from Dr. O. L. Norsworthy (source, name and address of patient ....), has been examined in this laboratory and found to show the following: Gross appearance: Shreds of thickened mucous membrane, supposed cancer of sigmoid flexure. Minute appearance: Degenerate mucous membrane, only the superficial layers involved, with occasional white cells and areas of minute extravasation. Much biliary pigment, both black and yellow-brown. No evidence of carcinoma. Diganosis: Croupous colitis.

"A. E. THAYER.

"In communications please refer to number above given."

This specimen was mucous membrane passed from the bowel with a hemorrhage while under my treatment.

Treatment.—Was rest in bed, predigested food in two-ounce quantities, and bismuth subnitrate to be given just before each feeding. Adrenalin chloride hypodermatically, and Carrizo water were also used. Hemorrhages diminished gradually and some food was retained. At the end of ten weeks' treatment patient weighed 116 pounds, an increase of twenty-four pounds, and was eating fairly well. All symptoms were lessening gradually except nervous element. Nervousness and despondency grew worse, until a few days prior to death she became very hysterical and remained in hysterical coma for two days and nights, awakening for her food, then returning to her stupor; after which she aroused and was more cheerful and exclaimed she felt better than before since her sickness. The following morning at 5 o'clock on December 13th,

the patient stole from beside her nurse and left the house. The nurse soon found her under the house and returned her to the bed. No suspicion was aroused until five hours later the patient told the nurse and advised her to send for the doctor. The patient claimed she was looking for the butcher knife when the nurse aroused. She then ran under the house, attempted to kill herself by beating her brains out on brick pillars, decided it was too painful; next tried to choke herself to death with a stick down her throat; found that too painful; she sat down on a stick nineteen inches long and one inch square very hard, and had seriously hurt herself inside. I found pulse 118, temperature 103, and abdominal distension. A large opening into the pelvic cavity clinging posteriorly to the uterus was plain. A gauze drain was introduced, and patient's shoulders slightly elevated. A gradual increase of abdominal distension, soreness, elevation of pulse and temperature continued until death, which occurred forty-eight hours after injury.

The many points of interest in this case as they occur to me from the beginning of her ill health are: (1) The practice of forced vomiting to reduce flesh. (2) The result of such practice on the stomach, "contraction" and inability to retain food. (3) The increasing and extremely obstinate constipation for the lack of food or alimentary stimulation of its juices. (4) The extreme length of time the bowels were quiet without an action (two weeks). (5) The two weeks' accumulation of fecal matter causing death and exfoliation of the membrane of the colon, as proven by the croton oil, which was followed by the membranes, fecal matter, and profuse hemorrhage. (6) The relaxed abdominal walls and patient so emaciated I was enabled to palpate any of the internal organs. (7) That this patient was so low with such a serious disease "croupous colitis" as diagnosed by microscope and show evidences of such marked improvement until death. (8) What was the correct diagnosis, croupous colitis, or ulcerative colitis caused by pressure from hard fecal accumulation? (9) That the mental condition failed to improve with other conditions

and instead grew very much worse. (10) That any person contemplating suicide would resort to hysteria to get the advantage of her nurse. (11) That one would attempt suicide by forcing stick in vagina and sitting on it. (12) That an attempted suicider would tell of the circumstances in detail and give warning to doctor for relief. (13) That the death was a marked one of acute infected peritonitis. (14) Would an abdominal incision been the safer procedure or not? My opinion, endorsed by my consultant, lead me to favor vaginal drainage and believe my decision a correct one, though the patient died. (15) The lesson to be learned from the quite frequent practice of girls forcing vomiting to prevent the accumulation of flesh.

TWO INTERESTING GYNECOLOGICAL CASES.

H. A. BARR, M. D., BEAUMONT.

Of the many and varied forms of pathological growths and tumors to which the reproductive organs of woman are susceptible, and so often affected, fibroids and cysts together compose a very large percentage. Considering the present status or degree of gynecological knowledge, it necessarily follows that among the medical profession where nearly all are, or claim to be, gynecologists, there has been a great deal written and spoken concerning them. Their etiology, pathology, and treatment have received so much careful study and observation that, compared with the treatment given in these conditions one-half century ago, our present methods of treatment with the results achieved would appear to most of the gynecologists of that day as bordering on perfection itself.

In order to more intelligently compare the extent of gynecological learning of fifty years ago, and that we may be better able to realize and appreciate the wonderful advances made since that time, I will quote a few statements made by Dr. C. D. Meigs, who was at that time a lecturer in Jefferson Medical College, Philadelphia. These quotations are taken from lectures delivered by Dr. Meigs to his class during the year 1847. They are fairly indicative of the generally accepted views of that time on the subject of his lecture. Dr. Meigs says: "As to doing anything with those fibrous tumors that grow outwards toward the peritoneum, I look upon as hopeless." In discussing the possibility of removing these tumors by surgical measures, Meigs unconditionally condemned and advised his students against any such procedures, saying at one point in a lecture, "I detest all abdomnial surgery." Meigs advised that when a fibroid tumor became large enough to begin to choke the pelvis it should, if possible, be pushed up into the abdominal

cavity, where, in case it continued to grow, it would have room to do so without, at least for some time, impinging upon adjacent organs. In case the mass could not be pushed upward by the hand of the gynecologist, he advised inserting a pessary and gradually increasing the upward pressure until the tumor would finally become dislodged from the effects of a continuous pressure. Benign tumors of the uterus were in that day looked upon as hopeless and dealt with much as we of the present day look upon and deal with malignant conditions which have reached the inoperable stage. Meigs, although often dogmatic in his assertions, was yet at times somewhat optimistic, as is evidenced by the following hopeful expressions used by him at the close of one of his lectures on benign tumors of the uterus, during the year 1847. He said: "I wish, my friends, I had more comfortable prospects to hold out for you than those which, as to tumors of the womb, are contained in this lecture; medicine is always making progress, however, and let it be your duty so to study, to observe, and to reflect upon these common disorders as to enable you in the next half century to leave more consolatory counsels to your pupils than I can to mine."

Case 1.—Miss G., age 24, began menstruating at 14. After the first year following its appearance, the occurrences have been regular and practically painless. Complexion fair, weight 120, slight leucorrhea for five years previous to coming under my care. Family history negative. General health, as far back as she could remember, fairly good. I first saw her in May, 1901, at which time her appearance indicated a fairly well nourished condition. In reply to the usual questions, she stated that her general health was about as good as it had ever been, appetite fair, slept well, and the bowels, liver, kidneys, and uterus were, so far as she could determine, regular and properly discharging their functions. There was no complaint of suffering any pain at any time. On inspection it was noticed that the face was covered at many points with dull, copper colored patches. The abdomen protruded to a degree usually observed in the sixth month of pregnancy; in fact, her outward appearance strikingly indicated a sixth or seventh

month pregnant state. Examination revealed external genitals normal and healthy, vaginal mucous membrane normal, not discolored or congested. Cervix conical, firm, and hard. Position of cervix very high, and continuous with a uniform round mass the size of an average year-old child's head. The mass, including the cervix, was freely movable in all directions, except downward, which was very limited. The breasts were normal, though very small. The patient assured me that her menstrual flow had been uninterrupted, the last period having ceased only a week before coming to me. Patient stated that she had first noticed some slight enlargement in lower part of abdomen five years previously, but it had only grown rapidly during the past eighteen months before coming under my care. During the first two or three years following her discovery of the enlargement it produced no deformity and gave her no pain. She had, aside from worry, given it no attention, not having spoken to any physician concerning it, because of her disinclination to permit an examination, which she felt sure would be necessary.

The mass had now become so large that no form of clothing or dress would disguise its presence, hence she was practically wholly incapacitated and disqualified for the discharge of all her social duties requiring a mingling with others, the conspicuous, protruding abdomen subjecting her to ill-concealed glances of derision, and, later, to slanderous comment. This was her reason for desiring to submit to an operation and have the tumor removed, for, as before stated, she suffered no pain or discomfort otherwise. I dare say that there are none here today who would question the fact that this unfortunate young woman really suffered more acutely than many others similarly affected, but suffering much physical pain. Notwithstanding her plausible story and her reputation for truth and chastity, I hesitated in expressing an opinion, that only a pathological condition existed. However, after careful investigation, and a second examination, I finally decided that such was the case. She at no time suffered physical pain on its account, but was doomed to a life of seclusion. The

mass was rapidly increasing in size, a continuance of which would inevitably soon result in a condition which would render the necessity for an operation imperative. After a careful consideration of the case from different standpoints, I decided that an operation was both justifiable and necessary. While she was very anxious to have the tumor removed, she stated most emphatically that, if it could not be done without removing either the uterus or ovaries, it was to be left alone. The operation was done, or rather begun, May 20, 1901. On opening the abdomen the tumor, which you see here, was easily lifted out of the abdominal cavity, there being no adhesions whatever. The mass was smooth and glistening, and somewhat congested in appearance, it being extremely vascular, its surface being permeated in all directions by numerous capillaries together with a large number of greater vessels. As it was clearly impossible to remove the mass without the uterus, and this the patient had absolutely forbidden, there was nothing left to do but to return the tumor to the abdominal cavity. While the mass had been delivered outside the abdomen through a four-inch incision without much difficulty, no manipulation at my command would induce it to return through the opening through which it had such a short time before come out. It was not until the incision had been lengthened by at least an inch that the mass was finally pushed back into the abdominal cavity, and I was only successful then by exercising a dangerous degree of force. The abdomen was closed and the patient returned to bed, and was up and about on the fourteenth day, her recovery being uneventful. The patient left the hospital on the twenty-fourth day after the operation, and I heard no more from her until June, 1903, a little more than two years, at which time she returned and desired that the tumor be removed even though the uterus should have to be removed with it. On questioning her as to why she had changed her mind, it was with great surprise that I learned that about six months before she had married, after which event her troubles began. Soon after marriage she began to suffer pains in her back and head; appetite became poor, and she could not sleep as formerly. Three

or four months later she became pregnant, and this only exaggerated all her troubles. Within a short time after becoming pregnant, miscarriage appeared, after which her condition became much worse. She suffered now not only pains in the small of her back and head, but in the bladder and rectum also. She was now suffering from a profuse purulent leucorrhea, which, together with her other troubles just mentioned, rendered her condition very much worse indeed than when she came to me the first time. She was prepared for the operation, which was done the second day after being moved to the hospital. Knowing that after removing the mass there would be considerable redundant abdominal wall, I freely dissected out the scar resulting from a previous operation.

On opening the abdomen, the first thing that presented was the tumor. At the previous operation, as before stated, the mass was entirely free of adhesions, and could be easily lifted out. Now almost its entire anterior and lateral surfaces were bound by adhesions to the omentum or abdominal wall, there being also numerous adhesions of its upper and posterior surfaces to the intestines. The separation of these adhesions was the most tedious procedure on account of their wide extent and great vascularity, it being necessary to use many ligatures before the mass was finally freed. After freeing the tumor the remainder of the operation was carried out in the usual manner, the uterus being removed entire. The numerous adhesions met with I attribute as resulting from traumatism arising from the force used in returning the mass to the abdominal cavity during the former operation. While there was considerable shock following the operation, she soon reacted nicely, and her convalescence was rapid and satisfactory throughout. She was able to leave the hospital the twenty-fourth day after operation. Her general condition continued to improve until she became well and strong, and has so continued up to the present time.

Case 2.—Mrs. M., age 27 years, married six years, has always enjoyed fairly good health, though never robust or very strong, weighing usually between 98 and 104 pounds. Began menstru-

ating at 15, which continued regular after the first year without pain. Suffered some from leucorrhea after birth of second child, which her physician told her was due to a lacerated cervix. Patient came under my care three months after birth of third child, and, in brief, gave the following history. She stated that she was the mother of three children, the last one of which was an apparently fairly well nourished and healthy child, and, so far as she could determine, the course of pregnancy had been normal throughout, she not having suffered any more pain nor inconvenience than is usually experienced in such a condition. Patient stated that her last labor was natural and comparatively easy, but that after the birth of the child the abdomen did not reduce in size to the degree noticed after former labors. Little attention was paid to this until the expiration of two weeks, at which time she felt sure that her abdomen was perceptibly increasing instead of diminishing in size. Her physician's attention was called to it, and he at first was at a loss to explain the reason therefor. As she was also suffering some pain in lower part of abdomen, hot fomentations and turpentine stupes were applied and kept up at intervals for several days. Despite all that was done, the abdomen continued to rapidly increase in size. I found her condition to be as follows: She was markedly anemic, extremely emaciated and weak, temperature normal, pulse 120 and of poor volume, her abdomen was enormously protruding and tense, the enlargement extending upward so high that the pressure on diaphragm greatly interfered with respiration. The cervix was high up in the vagina, its lower end pointing toward the right. The uterus, which was extremely difficult to make out, the mass having well-nigh enclosed it, was displaced far over to the left. The mass could not be moved to any appreciable extent, apparently on account of adhesions and its large size, which well filled the entire abdominal cavity. By palpation and bimanual examination, it was not difficult to determine that the mass was composed of a sac filled with fluid. The pressure on the stomach was so great that the patient could not tolerate more than an ounce and a half of liquid food at one time; hence she was

practically starving to death. A diagnosis of cyst, probably ovarian, was made, and an immediate operation advised. The patient readily agreed to any suggestion, in fact, so distressing had her condition become that she would have been willing to undergo most any form of treatment, however dangerous, that held out any hope of relief. Assisted by Drs. Meyer, Clough, and Martin, Dr. F. S. Hander administering chloroform, the operation was done February 12, 1903. On opening the abdomen it was my intention to aspirate the cyst, but, notwithstanding great care, the cyst wall was punctured, either by the scissors or scalpel. The patient was then turned on her side, and enough of the fluid allowed to come away to enable us to deliver the sac and part of its contents through an opening of medium length. As its surface shows, the adhesions to surrounding structures were numerous and extensive. The intestines were adherent at many points, as was the omentum and lower surfaces of the liver and stomach. On account of the unusually large surface of the tumor, the separation of its adhesions was a most formidable and tedious undertaking. It was finally accomplished, however, without accident, the right ovary being removed with the mass. As is shown from the specimen, it proved to be an intraligamentous cyst of the right broad ligament. After removing the mass an immense amount of raw and exposed surface was to deal with, part of which was covered by drawing the peritoneum over it with catgut sutures. A considerable surface, however, was left which could not be covered by peritoneum. After a thorough irrigation of the abdominal cavity with a warm normal saline solution, the abdomen was closed with through and through sutures of silkworm gut, without drainage. Patient was given forty centimeters of Stearns's anti-streptolytic serum, within eight hours after operation. The serum was given as a prophylactic on account of the extensive area of raw surface. As to the action of the serum in this case, I am not prepared to express an opinion, further than that the patient's recovery was uneventful, her temperature never going above 99½. Five days after the operation she was allowed to nurse her infant, and so continued until

her discharge from the hospital on the twenty-eighth day after being operated upon. As the patient is now living in Beaumont I personally know that the health of herself and infant is now good, and that she has gained twenty pounds since the tumor was removed.

SECTION ON STATE MEDICINE AND PUBLIC HYGIENE.

1. Incipient Insanity, Diagnosis and Treatment.
   John Punton, M. D., Kansas City, Mo.
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INCIPIENT INSANITY, DIAGNOSIS AND TREATMENT.

JOHN PUNTON, M. D., KANSAS CITY, MO.

The mildly insane appeal, as a class, more often to the general practitioner than the alienist. Not until some serious complication has arisen in connection with the case is it found necessary to consult the medical psychologist. My remarks will purposely be restricted to those varieties of insanity with which the general medical practitioner is more liable to come in contact; emphasize those features which relate to their incipient manifestations, as well as diagnosis and treatment.

Considered from whatever standpoint, it is clear that no other symptom or disease can be compared with this demon of the intellect, in the terror it inspires, in the deep distress to relatives and friends, in the utter helplessness to the sufferer, as well as the serious havoc it creates in all business relations and social ties. The diagnosis and treatment of insanity should, therefore, claim our most earnest and constant attention. In view of the susceptibility to critical argument, no attempt will be made to burden you with a strictly technical definition of insanity, but if it is, as I believe it to be, an expression of some derangement of function or stricture of the brain, or both those combined, by virtue of which the normal mental attributes of an individual are so affected as to lessen the power of controlling thought, speech and conduct, then it would seem that the symptoms accompanying these changes are the most essential clinical elements for the physician to not only recognize, but correctly interpret, as these are nothing more or less than the tangible expression of the underlying pathological process.

When, therefore, we are called to minister to a case presenting symptoms of insanity, and this principle is applied, we find that

its chief clinical feature represents one of three great psychological states, viz.: first, mental depression; second, mental exaltation or delirious excitement, and third, mental weakness or enfeeblement. Now, upon analysis, you will observe that these correspond to the three most common varieties of insanity, viz.: Melancholia, mania and dementia. It is, therefore, extremely important that we familiarize ourselves with not only the psychological, but also the accompanying corporeal changes with which these are associated. Dementia does not properly come within the scope of my subject, and I shall purposely omit its consideration, confining my remarks to the study of melancholia and mania.

At the present time a remarkable change is taking place in reference to our former knowledge of insanity, characterized by a marked disposition toward more strict accuracy and simplification in its classification, diagnosis and treatment.

For centuries it has been the prevailing custom to classify insanity from either its etiologic, symptomologic, pathologic or psychological standpoint, so that those of us who learned our psychiatry fifteen years or more ago know full well how these views of insanity were handed down from generation to generation, and how they still cling to our memory, thereby moulding our forms of thought in classifying the more common types. It is only within the past few years, however, that we in America have fully realized their faulty consideration, and that, as the result of modern critical investigation, such views are now known to be wholly inaccurate and misleading, as the newer and more correct views recognize these common psychoses as belonging to and forming a part of the same pathological process.

Moreover, the newer conceptions of insanity recognize that in the study of these mental disorders, one group or class of cases tend toward recovery, while still another class have a characteristic proneness to rapidly merge into dementia. Upon this clinical fact, therefore, depends the future welfare of our patient. Hence, in every case of incipient insanity, we now look, from the outset, for the prognosis, as in the former case a favorable opinion

can be ventured, while in the latter class the final outcome is beset with serious misgivings.

The trend of modern psychiatry is therefore toward simplification in classification, whereby a simple species of insanity takes the place of several under the older teaching. Hence the modern term, *manic-depressive insanity,* is now being used for both mania and melancholia, which not only expresses their true pathological association, but also furnishes more correct rules for their diagnosis, prognosis and treatment. All authorities agree that incipient insanity, in the vast majority of cases, is preceded by varying degrees of mental depression, and various theories have been advanced to account for its presence, but it must be confessed that up to this date its true pathogenesis is not well understood. Mercier[1] declares "that the depression of spirits has for its physical basis a low ebb of tension of nervous energy, and that this condition has its physical effect in producing an undue lack of activity in all the bodily organs."

Clouston[2] claims "that depression is simply the functional expression of convolutional malnutrition."

I heard Turner[3] read a paper before the British Medical Association, in which he claimed "that melancholia was due to an interruption of the path of afferent impulses, thus affecting the sensory reflex arc, producing characteristic cell changes, which, he thought, formed the physical basis of melancholia. The consensus of opinion, however, by those most competent to judge, declares that melancholia is a disorder of cerebral nutrition, due to failure or defect of normal cellular metabolism, either in the way of anemia or congestion, with defective elimination of products that give rise to ischemic conditions and molecular disturbances in the cerebral gray matter. The exact mechanism of these changes, as before remarked, are not fully understood, but it is certain that they seriously affect the visceral and nutritive functions of the nervous system, as well as the higher mental attributes, all of which is expressed in the form of strain or fatigue of their normal processes. Hence, we find an impaired appetite, constipation, loss

of body weight, general weakness or exhaustion, insomnia and a distressed mental state, or feeling of pain in the head, which Clouston terms psychalgia, and which is usually referred to the occiput as belonging to and forming part of the clinical syndrome of incipient melancholia.

Moreover, accompanying these is a disordered emotional state which leads the patient to accuse himself of wrong-doing, or as being unworthy, and while appreciating the unreasonableness of his feelings, yet he continues to worry about his condition to such a degree as to cause him to lose all interest in his family and business associations, until finally the morbid self-introspection culminates in a true insane delusion, which at once carries him beyond the province of incipient melancholia, and places him among the more complicated types of the disorder.

In the diagnosis, therefore, of incipient melancholia, all important is the absence of delusions, as their presence always indicate a more serious and advanced state of the disease. We must also remember the important rôle heredity plays in its production. Peterson[4] claims that this is encountered in fully one-half the cases, and that heredity, physical ill health and mental stress together form a triad of factors which are responsible for most cases of melancholia. Some innate weakness or defective brain constitution is, however, the recognized hereditary etiological factor of incipient melancholia, and, when an individual possessing such a birthright is exposed to the common causes of insanity, the symptoms of incipient melancholia may be readily induced.

The strenuous life incident to business, commercial and professional careers, as well as the various trades and other professions, all tend to induce nervous weakness or exhaustion, and nervous irritability, both of which constitute the cardinal symptoms of neurasthenia, which, according to Chapin,[5] is the most important factor in the production of insanity. He, therefore, fitly styles it as the soil out of which insanity develops.

To aid you in detecting this most common variety of insanity, the diagnostic criteria consist of the following symptoms, viz.:

Mental depression, insomnia, loss of body weight, general weakness and exhaustion, nervous irritability, impaired appetite, constipation, changes in physiognomy, feeling of unworthiness, and self-accusatory morbid ideas, with suspicious fear. When these present themselves in any individual (and all of them are rarely wanting in some degree, at least), and become persistent, whether the cause be known or not, they constitute the actual presence of that variety of insanity we term incipient melancholia. Moreover, if these symptoms be recent in outset (although melancholia usually comes on insidiously), and their true significance fully recognized, it furnishes the most curable of all forms of mental disorder.

In this connection, it must be remembered that the incipient and presumably curable stage is ordinarily of short duration, and, at best, lasts but a few weeks before complications occur which render the prognosis much more unfavorable. Hence the importance of its early diagnosis, and the employment of appropriate methods of treatment. If, however, the insanity progresses, other developments take place which serve the basis for its further classification, there being, according to Clouston, no less than eight varieties of melancholia.

Beyond its simple or incipient stage, however, all these are complicated with symptoms which betray its more advanced character. These consist of the various forms of delusions, hallucinations and illusions, which in their formative period serve the foundation for the development of the chief complication of melancholia, viz.: suicide. Indeed, the suicidal impulse is so constantly present that every case demands rigid surveillance, as quite often the tendency to self-destruction is purposely concealed, or if undisguised, becomes the earliest sign that something is radically wrong mentally with the individual, but which in spite of being subject to dispute (as is so often the case), is usually good evidence of not only the presence, but also the chronicity of the insanity. In addition, melancholia may be complicated with epilepsy,

hysteria, mental agitation, resistive or obstinate paroxysms, stupor, exhaustion, homicide, primary dementia, and even cause death.

Viewed from the modern standpoint, melancholia may also be associated with mania and even dementia; indeed, these different mental states are now known to be simply differences of degree, rather than of kind, and quite often are found affecting the same individual. Hence, it is not uncommon to find incipient insanity presenting the opposite picture to that already described, and instead of the marked mental depression, there is an abrupt onset of serious mental exaltation or hilarious excitement, with other clinical features that constitute true mania.

In the vast majority of cases, however, this is preceded by a stage of mild depression which may have been overlooked, and in most cases of incipient mania there is present more or less derangement of the bodily functions similar to those which obtain in melancholia. Whether the onset be sudden or gradual, the dominating clinical element of mania is an exalted state of the mental attributes, in which ideation and intellection is greatly intensified, accompanied with marked and varied emotional changes. In its simple form, the mental exaltation often resembles the condition of a man under the influence of liquor. For instance, no one wonders at such a person being more or less jovial, talkative, and even foolish in his manner, but when such a condition suddenly appears in a man without any such cause, and he undergoes a similar change in his speech and conduct, which is persistent, besides associated with more or less loss of self-control, we are justified in concluding that he is suffering from one of the milder varieties of mania. His every act betokens that his highest cerebral centers have lost their control. Such persons talk in an excited and rapid way, much more so than is their usual custom, their sleep is also disturbed, and they are disposed to be fickle or quarrelsome; indeed, their whole conduct, when compared with their former standard, is at best foolish and unreasonable. Moreover, such persons affirm that they are well, and claim they feel

better than ever before in their lives, even when surrounded with the most adverse circumstances.

The melancholiac, on the other hand, recognizes that he is ill, and exaggerates his condition, feeling out of sorts with himself and his surroundings. Both, however, may view with suspicion efforts put forth for their good, hence their irresponsibility must always be borne in mind. A fact worth remembering is that in both mania and melancholia, insane conduct generally precedes, for a variable length of time, the development of delusions and hallucinations, although in melancholia they generally manifest themselves somewhat earlier than in mania.

As a further aid to the diagnosis of incipient insanity, it must be remembered that heredity plays even a more prominent part in the production of mania than in melancholia, hence, when the family history is correctly ascertained, it is found to be almost universally associated with some degenerative neurotic taint. This fact has led many physicians, as well as laymen, to believe that because of its hereditary nature, mania is incurable from its inception, and therefore discourage all attempts to provide appropriate treatment. Such a view is not only erroneous, but directly harmful, and not in accord with scientific medical experience, which teaches that heredity is not a bar to speedy and even permanent recovery, but does render the patient more vulnerable to a relapse, when not judiciously advised and protected by appropriate medical skill.

This grossly misleading hereditary bugaboo, however, which is admitted to be the leading etiological factor, and which, to many, appears to offer no means of escape, is, fortunately for us, not beyond all hope of redemption, but can be remedied and even cured, when subject to scientific medical treatment, and loses half its horror when this great truth is better understood by our profession, as well as the general public. It is not, therefore, as some suppose, a necessarily fatal doom that will sooner or later swallow up its unfortunate victim, and such a misconception, when promulgated by a supposedly up-to-date medical practitioner, is not

only inexcusable, but directly culpable, and at once betrays his unfitness to practice medicine, by virtue of his weak and faulty medical education.

White,[6] in his recent valuable paper on "The Geographical Distribution of Insanity in the United States," claims that the numerous causes which are ordinarily assigned by the superintendents of our State insane hospitals, to account for the presence of insanity, such as domestic trouble, business anxiety, excessive study, loss of property, religious and political excitement, death of friends, disappointment in love, and similar causes, are in reality, only accidental contemporaries, as the true underlying condition in all these cases is the predisposition to insanity, which may be inherited or acquired by the patient.

Of all causes of insanity, heredity, by this author, takes precedence of all others, the general average for all countries having been estimated to be no less than 60 to 70 per cent, which White thinks falls far below the actual truth. Next to hereditary predisposition, he claims come acquired predisposition, and the two most important agents in bringing this about is said to be alcohol and syphilis, both of which may also act as true exciting causes. In this connection, it must be remembered that it is not unusual for mania to develop insidiously, in which case often the mental disease manifests itself in such an apparently rational form, for months and even years, that the patient is regarded as being simply "peculiar" or "eccentric," but, to the trained and experienced psychiatrist, these very peculiarities are recognized and interpreted as the lurkings of an incurable mental disease we term paranoia. In such cases, however, the family history reveals its foundation in the form of a transmitted hereditary predisposition, which leads the patient to morbidly analyze his own thoughts and feelings, and worry over them in secret, and apply to himself and others morbid interpretations of passing events, until his apparently sane and rational conduct becomes converted into true insane delusions, which become fixed and systematized and of a persecuting nature, which not only betrays the chronic nature of the insan-

ity, but also differentiates it as being the most dangerous of all forms of mental disorder.

Moreover, the incipient stage of general paresis closely resembles neurasthenia, although in paresis the mental disturbances are much more pronounced. Its insidious onset, however, is responsible for many mistakes in diagnosis, but accompanying the common characteristics of neurasthenia we find in paresis a marked but gradual failure of memory, with exalted or expansive ideas, an inability to write and spell as correctly as formerly, indifference in habit and conduct, with tremor of the face, hands and tongue. Later these are accompanied with inequality of pupils, which does not readily respond to light, defects of speech, ataxic gait, general weakness, exaggerated reflexes, which still later become abolished, and finally the presence of undoubted delusions of grandeur or misconceptions of wealth and physical strength, all of which are usually dependent upon a syphilitic infection or alcoholic excess, or both of these combined. The excessive use of alcohol may also produce an exalted mental state known as delirium, which, in its more severe grades, constitutes true mania. With the removal of the cause, and appropriate supporting measures, it may rapidly disappear, but often, in spite of the best care and treatment, the characteristic features of alcoholic insanity may manifest themselves, in which case we find varying degrees of amnesia of defects of memory; indeed, illusions of memory occur more often in alcoholic insanity than in any other form of mental disorder.

To recapitulate, we find that in addition to its marked hereditary character, the diagnostic criteria of incipient mania consist of the following symptoms: mental excitement, insomnia, general restlessness, changes in physiognomy, confused and loquacious speech, presenting every degree of irrationality, excitable and foolish conduct, gastro-intestinal and other visceral and secretory disturbances, which may also be accompanied with a slight or marked increase of pulse and temperature. Like melancholia, it may be complicated with delusions, hallucinations and illusions,

accompanied with violent, destructive and immoral conduct, as well as suicidal, or, more commonly, homicidal tendencies, but these I repeat are true complications, and do not belong to its incipient stage. Moreover, mania may be found associated with other diseases, like epilepsy and tuberculosis, but when any of these complications are present they must be treated accordingly.

Generally speaking, both melancholia and mania, in their simple or incipient stage, do not pass for insanity by the laity or even the lawyer, and the peculiar vacillating mental moods and foolish conduct are unfortunately too often attributed to physical rather than to mental changes by the doctor in attendance, consequently many a man and woman is allowed to become incurably insane by faulty methods of diagnosis and inappropriate methods of treatment during the incipient or presumably curable stage.

Ordinarily, it is not until some attempt at suicide, or the presence of some other serious complication, like delusion or hallucination, or even homicidal tendencies appear, that the case of incipient insanity seems to have any serious special significance relative to the enforcement of appropriate methods of treatment. It is therefore either through sheer ignorance, indifference, or lack of prompt, decisive action on the part of the physician or friends of the patient that the curable stage is thereby overlooked, ignoring the fact that the very presence of these complications not only betrays its already advanced and progressive chronic character, but also renders the prognosis much more uncertain.

Let the diagnosis, however, be what it may, the general indications for treatment are very clear, and much the same in all forms of incipient insanity. Every effort must be put forth to seek and remove the cause, and, in this, no means known to medical science must be neglected. Individualized care is, therefore, as imperatively demanded in insanity as in any other form of disease, and as no two persons are alike, so no two cases are just exactly alike in their special demands for treatment. In a recent discussion of this subject in New York City by my friend Dr. Jospeh Collins[7] (who, by the way, is here today), he said, among other things,

"That the acute insane did not require fine hospitals or modern laboratories, so much as they needed careful medical treatment, such as would be given to a person ill with typhoid fever." "Far better," said he, "give succor and the right kind of care and treatment to insanity in its incipiency, and thus prevent it as far as possible from becoming chronic," and with this sentiment I most heartily agree.

Dr. Yellowlees,[8] the noted Scottish alienist, recently read a paper before the British Medical Association upon the treatment of incipient insanity, in which he claimed the general indications for its treatment were as follows: First, removal, as far as possible, of the cause of the illness; second, removal of the patient from the conditions and persons associated with the commencement of the illness; third, wise medical treatment; fourth, experienced nursing; fifth, pleasant companionship and surroundings, that morbid thoughts and feelings may be forgotten in a healthy mental atmosphere, and sixth, improvement alike of body and mind by good food, sufficient out-door exercise, suitable occupation and amusement.

Almost without exception the patient suffering from incipient insanity requires isolation, and while the cause is often difficult to demonstrate, more especially in the absence of knowledge concerning its true pathology, yet this is so commonly allied to home conditions and surroundings that Dr. Yellowlees very properly emphasizes the importance of a new environment. At the present time there are four avenues open to the physician, in which to provide care for his insane patient, viz.: First, by treating him at home; second, by sending him to a general hospital; third, by removing him to a sanitarium, or fourth, by his commitment to a State insane hospital. Now the choice of these is determined by several factors, such as (1) failure of the family physician to recognize the need of rigid isolation and appropriate treatment; (2) failure of the patient or his friends to co-operate with judicious medical advice; (3) fear of exposure of family secrets, or an imagined stigma which associates shame and disgrace with mental disease;

(4) lack of finances to furnish private care; (5) foolish desire to wait for further developments. These and many other contingencies cause a halt before deciding to put in force this well-established curative principle, thus ignoring the golden opportunity of its incipient and presumably curable stage, although it has been emphasized for centuries that insanity in its incipiency is a most curable disease, far more so than typhoid fever, pneumonia, or even rheumatism, when subject to early appropriate treatment.

The apparent sanity of the patient, the mental change often being so slight or deceptive, readily tempts the family physician to undertake the treatment at the home of the patient, but, in the majority of cases, this proves a most unwise experiment. Moreover, in mild cases, often the morbid condition of the liver, stomach, bowels, kidney, and even the uterus, which accompany insanity, is taken for the cause, while the underlying psychological change is either overlooked or entirely ignored, until some serious mental complication betrays the actual insane condition.

To remove such patients to the average general hospital, as they exist today, is also a measure of doubtful utility for obvious reasons. Likewise, their being committed to the State insane hospital is scarcely necessary, and usually meets with bitter opposition, although it is far better to do this than allow serious complications to develop at their homes. A wise change of environment, however, is ordinarily imperatively demanded, but unfortunately many physicians misconstrue this teaching by prescribing a change in which travel forms the chief ingredient. Such a course, however, usually ends in disaster, and I have known many serious blunders to be made in this way, for it must not be forgotten that incipient insanity usually requires partial, if not absolute or complete, rest in bed, and other therapeutic measures in connection with their changed environment, and the constant change of scene and surroundings which travel brings proves directly harmful by adding strain to the already exhausted state of the nervous system.

Recognizing, however, the great dilemma in which the family

physician is often placed at the present time in providing the curative principles of isolation, it is my firm conviction that there is a great demand in every State of the Union for the erection and equipment, at public expense, of small-sized sanitariums devoted exclusively to the reception, care and treatment of the incipient and presumably curable cases of insanity. These could properly be termed Reception, Detention, or Psychopathic Hospitals, in which such persons could remain under medical surveillance until the question of their curability could scarcely be doubted, while the number received should be strictly limited. In this way, many persons who now refuse State aid would gladly accept it, while the percentage of the recoveries would be greatly increased.

I have dwelt upon this part of my subject purposely in order to emphasize the importance of the principle of isolation, as I believe its lack of early employment is the responsible agent for a large proportion of the failures to cure incipient insanity.

When the treatment is undertaken at home, and often there is scarcely any other alternative, the patient should be isolated and placed in charge of a competent nurse or companion, who should be instructed concerning the danger of suicide, and the pernicious effect of morbid suggestion. Every effort should then be put forth to conserve the strength of the patient, for it makes little difference whether you are dealing with mental depression or mental excitement, the general principles of treatment are much the same in either case, having for their general purpose the husbanding of the vital forces.

It must also be remembered that insanity is characterized by serious brain exhaustion, and the rapid combustion of nervous tissue must be met by remedies which not only sustain but promote nutrition and assimilation. In mental excitment, much good can often be accomplished by rest in bed, combined with hydrotherapy, tonics and judicious feeding. In mental depression, there may possibly be greater need for the use of remedies directed to improving the circulation, and stimulating peristalsis, but in excitement, as well as in depression, there will frequently be found

a state of autotoxis, constipation and imperfect digestion with malassimilation. Systematic efforts should therefore be employed to overcome these, by the establishment of a fixed habit, appropriate food, laxatives, enemata, effervescent salts and aperient waters, combined with abdominal massage and various forms of exercise. The functions of the liver, stomach, uterus, kidney and bladder should also receive careful attention, and appropriate means and measures, not excluding surgery, used to rectify any interference with their normal processes. These, however, as before remarked, are usually effects and not the cause of the ailment, insanity being the offspring of brain disease.

As insomnia proves a most troublesome factor in both exalted and depressed mental states, the tendency to lean too heavily on drugs for its relief is very great; indeed, the inexperienced physician often expects entirely too much from the use of drugs in the treatment of insanity, and relies upon their use when other and more appropriate remedies would yield better results. As a general principle, however, powerful sedatives, such as hyoscyamin, conium, cannabis indica, bromides and even chloral, when used to subdue mental excitement, do no good whatever, and are often productive of much harm; for the quiet they bring, combined with the restrained muscular activity, is not conducive to the cure of the underlying pathological conditions.

The splendid line of hypnotics, however, which modern pharmacy furnish, such as sulfonal, trional, chloretone and veronal, furnish us a quartette equal to any ordinary emergency, while the preparation known as paraldehyde (P., D. & Co.) is perhaps the purest and most efficacious hypnotic we have. In certain violent mental states, with marked motor excitement, the use of prolonged hot baths, with cold to the head and other hydrotherapeutic measures, are sometimes very efficient in relieving not only the excitement but also the insomnia which often accompanies it. These measures may also be cautiously continued with the use of certain drugs, such as chloral, bromides, cannabis indica and even hyoscine alone or in combination, but, as a rule, these should be

avoided if they can possibly be dispensed with, and should be used when necessary only at night, to induce rest and sleep.

In all cases of incipient insanity, tonics to promote tissue building, such as iron, quinin, strychnia, vegetable bitters, mineral acids, hypophosphites, malt preparations and cod liver oil are exceedingly useful. These should also be supplemented with plenty of nutritious food, which at first may be largely liquid in character, consisting of milk, eggs, gruels, custards, jellies, soups, broths, and juices of fruit. Later, these can gradually be combined with solid food, until this eventually entirely supplants the liquid diet. Quite often, both food and medicine are persistently refused, in which event mechanical feeding must be resorted to; indeed, there is always danger, even when the patient eats voluntarily, of his not taking sufficient nourishment to compensate for the underlying nervous exhaustion.

In an able article by my friend Dr. Burr, of Michigan, on the "Care of the Recent Case of Insanity," he calls attention to the fact that if delusions or hallucinations be present no attempt should be made to dislodge them by logical argument or criticism, but they should be either wholly ignored or positively denied, without any discussion. Moreover, during convalescence, he urges the physician to place safeguards about his patient to prevent the premature access of friends and relatives, besides pointing out the dangers which lie in stimulating the patient to cerebral effort, for the purpose of drawing him out in conversation, or even excite him in the form of jollying, as these only tend to add to mental confusion, and thereby provoke a relapse. Great care must therefore be exercised in the convalescent period not to allow the patient to exceed the limits of normal fatigue, or undertake a return to business before being fully mentally established. All forms of exercise and amusement, as well as outdoor air and sunshine, combined with cheerful companions, pleasant surroundings, and healthful environments are exceedingly important factors to favor a speedy recovery.

In summing up the various agents which modern medical science

recommend in the treatment of incipient insanity, it seems to me they can all be classified as follows: First, mental, moral or psychotherapeutic agents; second, mechanical appliances, including electricity, massage and hydrotheraphy; third, hygienic measures, such as exercise, employment, and amusements of all kinds; fourth, medicinal agents or the use of drugs; fifth, dietetics which include the various forms of food, and forced feeding; sixth, surgical procedures, and seventh, prophylactic measures.

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DISCUSSION.

DR. G. H. MOODY, San Antonio: I do not know that anything could be added to the excellent paper by Dr. Punton. The doctor has certainly well covered all points of importance with reference to the extreme necessity of beginning early in the treatment of these cases of incipient insanity, and foreseeing an oncoming mental breakdown in time to prevent its approach by appropriate measures at that stage of the patient's illness where there is nothing present more than a brokendown nervous system and lowered vitality. It is just at this critical point where the general practitioner has opportunities for accomplishing much for his patients, and at last, when the nervous breakdown or mental unsoundness has come, he may be of great service to them by giving his opinion as to the best steps to be taken to ward off serious permanent results that might ensue. We are certainly under many obligations to the doctor for this excellent paper, and I move that we thank him for it.

DR. I. C. CHASE, Fort Worth: I wish personally to thank Dr. Punton for this valuable paper. The demands of our friends and patrons, of law and justice, all require the making of a proper decision in various border cases of insanity. I do not believe it is possible for us to make a correct diagnosis of incipient insanity unless we are familiar with the present day

teachings. When most of us attended college the courses given in this subject were exceedingly meager. I suppose most of us have to work up this subject anew for ourselves. In this connection, there are two thoughts which to me have been exceedingly helpful. First, that insanity is a disease of the brain. I notice that our speaker referred to insanity as a mental disease. This conception relegates it to the realm of mental phenomena, and makes it incomprehensible. Considering it a disease of the brain we have an anatomical basis for our conception, and recent investigation tends to show that for every disturbed condition of mentality we have pathological brain changes. Second, the study of the anatomy of the nervous system furnishes an anatomical basis and assists in clear conceptions of the various divisions of nervous diseases, and is a great stimulus to the study of brain and nervous disorders. This study is usually looked upon as exceedingly difficult, but the mastering of the details of the central nervous system can be acquired in about the same time as is required for the careful anatomical study of the upper extremity. With a familiar working knowledge of the minute anatomical structures of the brain and central nervous system, one reads the pathology and symptomatology of brain and nervous diseases with ease, comprehension and interest. A careful study of this subject will bring fruitful results to every practitioner.

DR. PUNTON, closing: I thank you, gentlemen, for your reception of my paper. I wish to call your attention to just one fact, viz.: that in every State of this Union there is an annual expectancy of insanity, that is to say, every year there are a number of new cases of insanity that come to the general practitioner for treatment. It is estimated that 5 per cent of these acute cases of insanity die of exhaustion. While 40 to 60 per cent properly treated could recover. But today 60 per cent go to the State insane asylums to remain there the rest of their lives. Now I venture that in this State there will be 400 to 600 new cases of insanity this year. As has been remarked in the discussion, a great many of these patients are unable to provide the necessary care. They are unable to go to private institutions, and yet no class of patients require greater care, more expensive care, than the acutely insane. Now, I think the greatest need in each State is the establishment of hospitals for the detention of the incipient insane, where mild cases could be treated without any fear on the patient's part of being branded with the everlasting stigma of being called insane, and I hope that this society will use its influence in this behalf in the State of Texas.

THE RELATION OF THE PUBLIC SCHOOLS TO THE MEDICAL PROFESSION.

PROF. ARTHUR LEFEVRE, AUSTIN.
State Superintendent of Public Instruction.

The growing spirit of mutual comprehension and co-operation between the various specialized functions of society is one of the most hopeful indications of progress toward the true aims of civilization. Every problem needs to be considered in the light of related problems, and only when workers in different spheres work with reciprocal sympathy and co-operation can they cease to work at cross-purposes. Few men can successfully specialize in more than one department, but everywhere there is need to uphold the idea that specialization ought to be a matter of emphasis, not of exclusion. Relations of the public schools to the medical profession pointedly illustrate the universal principle to which I have alluded.

The health of the people is one of the prime responsibilities of statesmen; also, whatever needs to be developed throughout the life of a people needs to be introduced in the schools. These two propositions, separately acknowledged as they are, would have been more fruitful of practical results had each been dealt with in the light of the other, and both developed with intelligent recognition of their dependence upon medical science. Legislators, teachers and physicians must co-operate. It is not enough that they should be separately interested in the public health; in the place of unco-ordinated and often mutually hindering efforts, should be substituted intelligent co-operation.

In the brief moments at my disposal, I can merely suggest a few practical measures by which far-reaching beneficial reforms might be inaugurated. Everything that I recommend has been tested, both as to feasibility and as to good effects, in the experience of various other States.

There are other matters, involving public health and protection against disease, where direct legislation is required; but for the immediate matter you have assigned for discussion to me, the only sort of legislation required is the provision of means to execute purposes already declared by statute, and to uphold authority already conferred. For the most part, the spirit of the laws of Texas is statesmanlike, and in the main their general provisions challenge admiration; but the means provided for executing their purposes are too often absurdly inadequate. An institution "of the first class" is solemnly ordained; but appropriations commensurate with the purpose do not follow. A law wisely requires the public lands to be surveyed; but the surveyors provided could not perform the work in two centuries. The Constitution nobly commands that the Legislature shall supplement the income from the permanent school fund so that every public school may be maintained at least six months in each year; but even the one-fifth of 1 per cent tax permissible has never been fully levied, and the average school term for the common school districts which depend on State and county apportionments is less than five months. In like manner all needed authority is expressly conferred upon the State Superintendent of Public Instruction; but in some vital matters he is left legally powerless to fulfill duties imposed by law, and in others it is physically impossible with the appropriations made for the Department of Education.

In the matter of co-operating with a department of public health, all that the Department of Education needs, besides adequate appropriations for printing and distributing, is a law requiring the State Superintendent to withhold from any county or independent district amounts due from the State apportionment until reports, required according to law, have been duly received from local officers. The efficiency of the schools would not be thus endangered, because the withholding of a monthly payment would always insure immediate attention to neglected duties—duties imposed by existing laws in the most absolute terms, but left without means of enforcement. As a general prop-

osition no public or private enterprise can afford to pay out great sums of money without exacting due reports both of the conditions and amounts of disbursements; and vital statistics are withheld which are essential to intelligent supervision. In particular, the mere power to enforce the making of suitable reports *would secure due attention to instructions* concerning, for instance, the examination of the eyesight of pupils, or of disinfecting city school buildings, issued in accordance with authority already amply conferred. A little money and the simple enactment suggested would place the Department of Education in a position to correct many existing unlawful and injurious conditions, and to discharge many useful functions otherwise impracticable.

On the side of the department of health, it seems to me that a bureau for the preparation of bulletins containing subject-matter suitable for distribution by the Department of Education, is the chief prerequisite for an effective dissemination through the public schools of the information needed for the self-protection and self-preservation of the people.

Infectious and communicable diseases are the causes of the premature death of thousands, and the still larger number who survive the primary diseases suffer permanently with their sequelæ. The greater part of this is preventable by means so simple that they can be understood by the pupils of our schools. Through the children parents would become interested and enlightened, and far-reaching results would be quickly secured. It is wonderful how easily children can be interested and instructed in such matters, and how much they will accomplish in practical ways when thus aroused. It is likely that the school children of San Antonio will soon be the means of nearly exterminating mosquitoes and flies in that city, thus saving themselves and their less docile fellow citizens from incalculable danger and suffering.

The school, especially the public school, is a focus to which all contagious diseases—diphtheria, scarlet fever, measles, whooping cough, sore throat, sore eyes, etc.—converge from infected homes, and from which they diverge outward to other homes. In our

cities there should be, and easily could be, such daily medical inspection as is already practiced in some cities of Europe and of this country. Every morning the teachers could send to a room provided for the purpose such pupils as showed suspicious symptoms. There the medical inspector disposes of them according to his judgment. The medical inspectors of Boston, in fourteen months, thus examined 16,790 pupils, finding 10,737 cases of more or less serious sickness, of which 77 were diphtheria, 28 scarlatina, 116 measles, 28 chickenpox, 69 pediculosis, 47 mumps, 47 scabies, 33 whooping cough, over 2000 cases of follicular tonsilitis, and an equally number of contagious diseases of the eye. One examiner's report for one week in New York shows 364 children excluded, as follows: Measles 2, diphtheria 13, scarlet fever 1, croup 3, whooping cough 4, mumps 10, chickenpox 15, contagious eye diseases 59, skin diseases 19, parasitic diseases 227.

The extent of the evils thus prevented is incalculable, but the cost is very little. In Boston well qualified physicians serve at $200 a year, each inspector stopping at four buildings every morning on school days. The work on the part of the teachers is a simple matter consuming no appreciable time, and the visiting physician easily examines the children sent to the waiting room. If a child is found to be too ill from any cause to remain in school, the inspector advises the teacher to send him home to be cared for by parents and family physician, and if the sickness is caused by a contagious disease, he orders the child home and reports the case to the board of health, which promptly take steps for suitable isolation, should the case require such measures.

In village and country schools the teachers could easily be taught enough of sanitary science and of the premonitory symptoms of many diseases to accomplish much good and avert much evil, if the simple means already suggested of securing systematic attention to instructions were provided.

I may add that much good service might be rendered even without the preparation of bulletins by a department of public health. Of course, a competent bureau of such a department could pre-

pare much more and better material, more timely to current conditions, and especially adapted to Texas; but with a small addition to office force and with a slight increase of appropriation the Department of Education would stand ready to begin the work.

I know noble men of science who would help with the generosity characteristic of their vocation; and for more than a year past only the lack of a few hundred dollars has prevented me from issuing instructions to all public school officers and teachers concerning various sanitary measures, and particularly requiring reports on the eyesight and hearing of pupils in accordance with simple means of examination, supplied with the instructions, that would enable any teacher to detect the existence of trouble and report the same to parents with the recommendation that medical advice be sought. I know that a law which merely declares a duty without providing any penalty for its neglect is for the most part *vox et preterea nihil;* nevertheless, had the pecuniary means been available, I would ere this have made such an attempt.

I believe that the next Legislature will not only make the small addition to the appropriation for printing and distributing needed, but that it will amend the statutes requiring teachers to make such reports to county superintendents as they may call for, and requiring the superintendents and treasurers of counties and independent districts to make such reports to the State Superintendent as he may call for,—by requiring county superintendents to withhold approval of vouchers until overdue reports are satisfactorily rendered, and by requiring the State Superintendent to withhold from any county or independent district amounts due from the State apportionment until reports required according to law have been received. Such a provision is needed from every standpoint. There are a few treasurers of school funds in this State who make reports to nobody. The omission occurs, not from defiance of law, but from sheer negligence. The same thing occurs with statistical and other reports on the part of a few school superintendents, and the latter continually complain about the neglect of teachers. It ought to be obvious

that efficient supervision according to duties and responsibilities imposed by law upon county superintendents and State Superintendent are thus rendered impossible for fulfillment, and that many opportunities for service are thus destroyed.

Since co-operation is the theme of these remarks, may I not suggest that we help one another? If you, gentlemen of the Medical Association of Texas, will take the trouble to urge the men who *represent you* in the making of laws to give heed to the simple and unobjectionable remedial measures sought by the schools, then the schools in their turn will powerfully subserve many of your own great and noble endeavors. Gradually the ideas you cherish will filter out from the schools into the homes, there to find practical application in every-day life. The people would then soon learn that successful sanitation requires the intelligent co-operation of all, and that effective protection against many plagues and dangers of life are under such conditions easily secured. On the one hand, teachers rate too low both their duties and their opportunities, and on the other hand the general public is prone to misconceive the schools as a burden for whose support they are taxed, instead of discerning that any proper taxation is simply a means of *co-operation* for some useful purpose. All discussion that tends to elevate the ideals of the one or to rectify the misconceptions of the other is serviceable.

But our people are already progressing rapidly in such matters —everything in the commonwealth of Texas is progressing rapidly—and it will not be so difficult as some think to prepare them to co-operate with every proper measure that contributes to the public welfare. The campaign of education should be prosecuted by our joint forces with hopeful energy. The spirit of the times strongly invites us.

DISCUSSION.

DR. J. W. CARHART, Austin: This is a most valuable contribution to the literature of this meeting, and the suggestions that have been made, if carried out, will prove most valuable to the schools and the children of our commonwealth. I believe that we should all of us do what we can to influence legislation in the future in regard to this matter that we may obtain

larger appropriations for carrying out the suggestions made by the Superintendent. This is my first suggestion. Then I have another to make, and that is, that so long as we have not funds to employ physicians to attend our public schools, I believe it becomes the duty of physicians in this Association and throughout the State to give attention so far as they possibly can do without any view to money compensation whatever; to watch over the physical condition of our school children, not only with the view of preventing the spread of contagious and infectious diseases among them, for we know that the school is frequently the nidus of all those diseases to which reference has been made this morning, but also to help the children of our schools, and protect them from over-pressure by the teacher to whom they have been committed. I have frequently advised the removal of delicate girls, 13 or 14 years of age, from the public schools in order to avoid the risk of ruining those girls' health forever. This fact demands our attention as intelligent physicians. Now, the teachers wish to make the very best possible show as to pupils under their charge, and they require too much of the pupils. I have been called in to treat girls who returned from school in such a nervous and mental strain that night after night they were unable to sleep. Let us use reason in this matter, and, if the teacher does not cease to crowd our little children and young girls beyond reason, then let the physician step into our schools and give the teachers professional advice.

DR. A. E. THAYER, Galveston: I wish to say how much I have enjoyed this paper, and how important its provisions seem to me, and to make two practical suggestions. The first is that, during the summer session here of six weeks, a great many school teachers come from all over the State of Texas. With a course in elementary hygiene, and some little instruction in recognizing the usual diseases of childhood, those who had received such instruction here would go back to their schools prepared to inaugurate just such reforms as the Hon. Mr. Lefevre has advised. The second is that these gentlemen present, on going back to their homes, could urge teachers to avail themselves of their privileges here and increase the attendance, and thus help to build up the public opinion upon which any hygienic reform must rest.

DR. BLAILOCK, Dallas: While I have nothing to add to the very excellent paper, I feel that I would be recreant to my duty if I did not express myself on a matter of so great importance. I have never had the pleasure of an acquaintance with the State Superintendent. I have had correspondence with him in reference to school work, and I know the facts he has stated are true. Inspection of public schools by some one competent to determine whether or not disease exists is a matter of so great importance that we can hardly overestimate it. I am especially gratified to know that doctors not being politicians and our public schools not being political

under the new laws you will scarcely find an independent district in the broad State of Texas that has not a medical man as a representative on the board of trustees. That being the case, it is a very opportune paper, and addresses itself directly to the boards of trustees in the State. Now this matter is of great importance, not only from the standpoint of the health of the children, but from an economic standpoint. As he has said, the schoolroom is a focus to which all contagious diseases converge and from which all contagious diseases diverge. Who is not familiar with the annual introduction of scarlet fever, and measles, and many other contagious diseases, to say nothing of diphtheria? And who can calculate the amount of monetary loss, to say nothing of the health of our dear little ones, from the neglect of this one point? I think this is a question that should be carried home. We should have an interest in our schools, and most doctors have; we should insist upon this, and, if they will not pay for the inspection, go and do it for nothing.

DR. HENRY C. HADEN, Galveston: I wish to heartily endorse all the State Superintendent of Public Instruction has said. I desire to say a word in regard to the examination of the eyes and ears of children in the public schools. Many children's lives are being ruined by the fact that they have errors of refraction with the resulting eye strain, headaches, and nervousness. Very frequently children are punished on account of inattention when it is due to the fact that they can not hear properly, owing to some disease of the ear, which, if detected, might be easily remedied. Trachoma, the disease commonly known as granular lids, which is a contagious disease, is very common among the school children in this country, particularly have I noticed it in Galveston. It produces most serious results, causing blindness in many cases. The United States government considers it of such importance that it will not permit any foreigner to come into this country who has trachoma, even in a mild stage. The law demands that they shall be sent back at the expense of the company which brought them to the United States. These conditions are not very difficult to detect and could be discovered by the teachers themselves if they had a little instruction. It is a very simple matter for teachers to learn to test the vision if they are given the proper test cards and shown how to use them. They can easily determine a deficiency of hearing. They can at least put aside cases which they suspect until some physician can examine them. This can be taught to the teachers as suggested by Dr. Thayer during the course of instruction given them here during the summer. Those who can not come here could be sent printed instructions, and in that way they would be able to save, not only the eyes of the children, but also prevent them from becoming nervous men and women. Dr. Allport of Chicago has recently sent out a circular to the secretaries of the different associations giving a synopsis of a system adopted in Illinois for the detection

of defects of vision and hearing. It consists of a set of ten questions which teachers are required to ask, answers to which give an idea whether the child has any defect of hearing or vision. This plan suggests itself to me as being a practical one, and I mention it for the consideration of this Association.

DR. SHROPSHIRE, Yoakum: I wish to emphasize one point the Superintendent brought out which has been neglected by the other members who have joined in the discussion. He refers to a State Board of Health composed of men from all over the State; of men of ability whose opinion would command respect. One man as State Health Officer can not command the respect of those antagonistic to him. If we had a board of health composed of men from all over the State, its opinion would be respected and command respect everywhere, and could not be controverted by any man of self-respect. Therefore, I think that that point of the Superintendent's paper should be looked after more carefully.

DR. MOORE, Galveston: I think we owe to Superintendent Lefevre a great deal for directing our minds along these channels. I would speak from the standpoint of public school man and doctor, having served in both capacities. I can remember very distinctly, as superintendent of schools, encountering just such difficulties as he mentions, and since in the general practice I have come more fully to appreciate both the difficulties of the teacher and the school authorities in effectually carrying out the laws as set forth. I think that we as physicians should be encouraged to learn more about the conduct of school affairs in the communities in which we live than we know at present. It has come to be a common thing to find doctors on public school committees and school boards. This I conceive to be one of the most important things that can be considered by any community, to place a well-informed physician on the school board so as to assist in directing the affairs of the community with reference to public health. I would like also before taking a seat to call attention to some very effective work being done now under the direction of a member of the San Antonio school board, Dr. Lankford. It has also been taken up, I understand, at Houston, and we contemplate taking the matter up in Galveston. It is the education of the children to know something about the causes of disease, and to recognize the carriers of disease, especially the mosquito and fly. As a school man, I used to think that we oftentimes spent too much time in teaching the zoology of Africa and Asia when we had material under our noses; that oftentimes children know more about the rhinocerous, which they have never seen, than they do about the house-fly, which has been present always. As an educational means for the development of the mind, the house-fly and the mosquito and the common plants which surround us can be utilized to much better advantage than teaching from pictures in books, and I am certainly pleased to see this

forward movement taken up by the physicians of the cities of Texas. The way, as indicated by Dr. Thayer, is plain. There will be held a summer school here for the instruction of teachers, and I am sure that the best medical men of this community hold themselves ready to teach the elementary principles and aid in every way in carrying forward this movement. I certainly appreciate this paper, and trust that we, as physicians, will go back to our homes determined to assist in carrying forward this work.

DR. LOGGINS, Ennis: I heartily endorse Superintendent Lefevre's paper and the various expressions that have been given concerning it by those who have discussed it. As I understand, the State is making preparation for summer normal schools for the benefit of teachers in various parts of the State, and the same measures for disseminating this knowledge which will be made at Austin could be made in the various parts of the State at the normals, and doubtless receive the support of the profession throughout the State. In order to make this effective, it will be necessary to enlist the interest of the people. There was one feature in Mr. Lefevre's paper that would make it very distasteful to the teachers, and that is the withholding of the salaries of the teachers of a school until a full report was received from the school. You will bear in mind that the majority of the teachers of our schools are females. They have nothing whatever to do with the making of these reports, and their salaries should not be withheld for the reason of some male school officer failing to make report.

DR. WOLDERT, Tyler: While in Philadelphia a number of years ago (1900) I became interested in the question of medical inspection of the public schools. Subsequently several friends met together and decided to work in connection with the Board of Education to provide a system of medical inspection, and we adopted the system now partially in force in that city. I helped write the constitution and by-laws for this society for school medical inspection. Formerly there were several hundred inspectors working as a volunteer corps, and I served in the capacity of inspector in one of the schools—(17th and Oxford Street)—for a year. The method was very simple. The different teachers of the school were instructed by the superintendent that when a child showed any evidence of not feeling well—as by lounging around—that it should be sent into a certain room to be seen by the medical inspector. This room was generally the superintendent's office. The inspector would visit the school every morning, and, when he would detect any symptoms of disease, he would tell the teacher that the child must be sent home. Right here is where we would often encounter trouble and opposition; because sometimes the parents of the child would object to having the child sent home from school by a strange doctor, and they would ask the question, "who is this doctor?" and "by what authority has he sent you home?" And the word would come back to us that we had no authority to send the child home nor to examine the children without the

parents' consent. We covered the whole city of Philadelphia in that way and we served without any remuneration whatever. Later it was found that the system would not work, because it was found that the authority coming from the Board of Education was not sufficient, and they have now inaugurated a new system. The system formerly in vogue has been placed under the authority of the Board of Health, who have reduced the number of inspectors to fifty, at a salary of $200 or $300 a year. This is proving of more practical value, because the inspector can enforce his opinion, and compel the child to remain at home until it is well. In this way contagious diseases can be combatted.

DR. L. M. BARNES, Thorndale: This is a ponderous subject. Dr. Punton read before this Association a very profound paper on mental diseases, and, as suggested by him, they have their origin in the school room, and a member of this Association spoke of the school being the nidus for diseases. To distinguish diseases is a study. I doubt that one-fourth of the doctors present saw a case of smallpox during attendance at medical college. To distinguish measles, scarlatina, smallpox, etc., is difficult. Compulsory inspection will cause you trouble, and will never be satisfactory; therefore, I believe the teachers ought to study physical diagnosis closely. They should be familiar with the symptoms of our contagious diseases especially. The choice of the inspector should not be denied; the teacher would be sufficient.

DR. RED, Houston: What I have to say is rather to make a suggestion, while I acknowledge I am not familiar with the machinery of the schools. It is this: In many districts in this State and other States, the appropriation of money for medical inspectors is not in existence and not likely to be soon. By what other practical means could the same end be attained? It occurs to me that either the State Superintendent or trustees of the school district or superintendent of the school should have the authority to have printed a little pamphlet and have that pamphlet furnished each school teacher, providing, among other things, that, if a child has any symptoms of sickness, or his health is being impaired by being confined in school, he should bring a certificate from his family physician; and, if, on account of poverty, the family has no physician, that they shall consult either the city or county physician. I think this would be a practical solution of the matter of inspection. Another thing, I do not think the teacher should be burdened with this knowledge. Our teachers are required to know enough now to keep them occupied till 11 o'clock at night and, after school days are done, during the summer. After they have acquired the knowledge to make them competent teachers, they have done enough. I do not think these over-burdened teachers should be required to learn medicine, and I for one would not care to submit my children to contagious diseases on the opinion of a teacher so instructed.

MR. LEFEVRE, closing: I will say just a few words to try to hold things down to the practical. It is results that we desire. Several things that have been said have shown pointedly the necessity, which I emphasize, of considering every problem in connection with related ones. I have already partly prepared a circular covering the ground Dr. Haden suggests, and which would serve that end if we could only get reports from the schools. The gentleman who fears that the rank and file of the teachers might be inconvenienced, if current monthly payments of the State apportionment had to be withheld until superintendents made the reports required by law is, I believe, needlessly uneasy. Under such a law the reports would undoubtedly be made and made promptly. The law ought to provide, however, that the State Board of Education should have authority to send an apportionment in spite of a delinquent report in any case where good reasons were shown for the delinquency or where peculiar hardships would otherwise be caused. But the salary of the delinquent officer should always be withheld until his duty has been performed. In regard to the appropriation needed, that is only a small matter; even $500 would enable us to do a great deal. I, of course, recommended bulletins of general information; but one might distribute hundreds of thousands of pamphlets as compliments and very little attention would be paid to them, whereas, if reports upon and communications were required, many of the desired results would follow. Dr. Red was mistaken in his point. As a question of law, medical inspectors in cities could be paid out of local tax funds for the maintenance of schools. Also, if appointed by the board of trustees, the physician would not be without authority, but would have the full authority of the board of trustees behind him. I have shown how little competent inspectors cost, as to both time and money. Of course, it will always be impossible to please everybody—woe to the teacher who tries to do it. If we wait until things can be done perfectly, nothing will ever be done. Meanwhile, schools are continually broken up by infectious diseases, and life and time are wasted. Shall we have this result rather than have some child sent home through some chance mistake in diagnosis? Even where the general good plainly requires, I am aware that some may be dissatisfied by enforced withdrawals from school; but the individual objection should not outweigh the interests of the whole. It is not asked or needed that teachers should study medicine, even for the smaller schools where medical inspection is hardly practicable. Without any consumption of time worth mentioning, any teacher could master the instructions sent out, and a great deal of good could be done by sending out proper instructions, if attention to them can be secured by effectively requiring reports to be made on them. One closing remark: It is most true that there is often injury done to the children of our schools by overburdening them, but it is not excessive requirements of subject-matter in courses of study, or excessive

knowledge, that burdens them. A child can learn more in seven hours a day than in ten hours a day. One of the gravest mistakes our schools make lies in the manner of teaching which assigns lessons to be studied at home and expects the pupils to know today's lessons when they come to school in the morning. A pupil should be expected to know yesterday's lessons; today's lessons it is the teacher's business to teach him. I have superintended public schools (where I think the pupils learned as well as in most places) where no home work was assigned except in the way of compositions and such exercises. Courses of study do indeed need refreshment in various ways, but I know none that really attempt to teach too *much*. It is unskillful teaching that causes the overburdening. Do not raise up your influential voices to demand that the curricula be diminished. The pupils will learn more if they are not required to study at night than if they are required to learn lessons at home and "recite" them at school. Teachers, I repeat, can not study medicine and take your place. We need your counsel and support; and the public welfare needs the intelligent co-operation of the teachers and the medical profession.

THE PROPHYLAXIS OF TUBERCULOSIS.

WILLIAM S. CARTER, M. D., GALVESTON,
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As nearly as can be estimated, tuberculosis is causing more than 5000 deaths each year in Texas, and approximately 150,000 deaths annually in the United States. Hundreds of thousands of mourning relatives and friends are satisfied to regard this needless sacrifice of human life as inevitable. It is not inevitable; it is the result of ignorance or neglect or both. There is no more reason why people should continue to develop tuberculosis today than there is for the existence of smallpox in civilized countries. In both cases we have well-established methods of prevention, which if carried out will lead to the eradication of these diseases. The saving of life and of suffering could be as great in the case of tuberculosis as it has been in the prevention of smallpox if proper prophylactic measures were carried out. According to the last Federal census report, more than 80 per cent of the deaths from tuberculosis occurred between the ages of 15 and 60. Aside from the suffering of individuals and families, this fact is one of sufficient importance to demand the attention of the State as well as of every citizen. If we fail to apply our knowledge concerning the prevention of tuberculosis, we should blame ourselves for the consequences.

For two decades the cause of the disease, its methods of spreading from the sick to the well, and the means of preventing it, have been known, but very few people have interested themselves in its prophylaxis. It is only recently that there has been any widespread agitation of the subject, and very few communities have as yet put into operation rational and practical measures for checking its spread. During this time epidemics of cholera have been prevented; much money and labor have been expended in the pre-

vention of typhoid fever; bubonic plague has been prevented from becoming epidemic in this country and in Europe; and yellow fever, which in the past has caused such losses of life and of commerce in the Southern States, can now be controlled and eradicated. Although there has been a gradual reduction in the mortality from tuberculosis, this has not been as great as it could have been, had the same effort that has been used in the prophylaxis of other preventable diseases been made to prevent the spread of tuberculosis.

Tuberculosis causes on an average more than 400 deaths every day in this country. If this number of lives were lost from some acute preventable disease like yellow fever, the people would demand that its ravages be stopped at any cost. The prevention of tuberculosis is a much simpler matter than that of yellow fever, but it is difficult to get the people and even some physicians interested in the matter.

Some time ago a physician of Colorado, who has studied the tuberculosis problem carefully for years, made the following statement to the writer: "Prophylactic measures are useless in dealing with tuberculous patients. The tubercle bacilli are so ubiquitous that in my judgment the only way of combating the disease is to increase the resisting power of each individual." This view seems unwarranted in the light of our present knowledge of tuberculosis. The tubercle bacilli are not so ubiquitous as was once thought. They occur in the immediate environment of the patient who suffers from the disease and are not disseminated universally. Sanitarians are now pretty well agreed that tuberculosis can be combated by checking its spread from the sick, and not alone by improving the resisting powers of the well. Of course, the question of resistance is not to be neglected, especially in those who are predisposed to it, but the question of needlessly exposing the well to infection is one of greater importance, at least until such time that immunity to tuberculosis can be produced with certainty. If this idea of maintaining a high power of resistance to all infections is to be our plan of checking the spread of tuberculosis, then

why not apply it to the acute infections? Why not discard our present prophylactic methods of combating diphtheria by establishing an accurate diagnosis in all cases, isolation, the determination of the period of infectivity, disinfection, etc.?

In the past physicians have too often been misled by the idea that putrefactive changes and drying are sufficient to render tubercular sputum innocuous. Trusting to these influences, they have neglected to instruct their patients to take the necessary precautions to prevent the infection of those about them. Without attempting to deny that these are powerful factors in the destruction of tubercle bacilli, we now know that we can not trust to Nature for the destruction of these pathogenic germs.

Putrefaction, drying and sunlight will kill many tubercle bacilli and in time may kill all of those given off by the consumptive, but such a long time is required for their destruction that many people become infected before the pathogenic germs are killed. Putrefactive changes may go on in tuberculous discharges for two or three months before the tubercle bacilli lose their virulence. Numerous investigators have found virulent tubercle bacilli in sputum four or five months after it has been allowed to dry (Sormain, Strauss, Schill and Fischer, de Thoma). Buchner found them present and active in the dust of a room one year after it had been occupied by a consumptive, while Stone found virulent tubercle bacilli in sputum that had been allowed to dry for three years.

Several independent investigators (Migneco, Mitchell, Crouch and Jousset) have established the fact that tubercle bacilli may retain their virulence after sputum had been exposed to direct sunlight for twenty-four hours, and that they only begin to lose their pathogenicity after thirty hours of continuous exposure to intense sunlight. Diffuse daylight does not kill tubercle bacilli.

We can not deal with all communicable diseases in the same way. Our prophylactic measures must vary with the manner in which they are communicated. With a highly contagious disease like

smallpox we must use isolation and disinfection, but in dealing with a disease like yellow fever, which is solely communicated by mosquitoes, we can discard disinfection if the infected mosquitoes are destroyed and others are prevented from becoming infected. The germs of typhoid fever are given off in the excretions of the patient. If these are destroyed at once so that drinking water can not become polluted and food can not be contaminated the disease can not be spread. There is, in this instance, no need of isolation or disinfection.

We should recognize the fact that tuberculosis is not a dangerous contagious disease but only a communicable one; that the disease is not acquired by coming into contact with the patient, but by breathing the powdered discharges which get ground up in the dust of houses from drying of the sputum; that the greatest danger in dealing with tuberculosis is carelessness in properly disposing of the sputum, and that if this is looked to one may live in the midst of consumptives, as in sanitaria, without the least danger.

The frequency of pulmonary tuberculosis and the fact that advanced lesions are generally found in the lungs, even when the disease manifests itself elsewhere, show that infection generally takes place by the inhalation of tubercle bacilli in the lungs. Before attempting to discuss the prophylactic measures, let us first inquire, how is the disease communicated from the sick to the well?

Following Koch's discovery of the tubercle bacillus in 1882, many experiments were made by numerous investigators to show that animals subjected to the inhalation of finely powdered sputum or dried cultures develop pulmonary tuberculosis. Cornet quotes experiments on more than 600 animals, in which small grayish tubercles appeared in two or three weeks after exposure to dust and the bronchial glands become enlarged. If the animals lived long enough, caseation and cavity formation occurred in the lungs and the peribronchial lymph glands went on to caseation.

Some of the attempts to produce tuberculosis experimentally in

animals by inhalation failed, notably those of de Thoma, Celli, Guarnieri, Cadéac and Malet, and of Cornet himself. Because a considerable number of these experiments gave negative results, Baumgarten, and afterward Flügge, denied the possibility of infection by the inhalation of dried particles of dust.

Cornet's first experiments with dried sputum were performed in 1888, and the dust particles were stirred up in small cages by mechanical means. In 1898 Cornet repeated these experiments under more natural conditions which represent those of the rooms of consumptives. These later experiments also answer all criticism that should be raised to Cornet's first series. Tuberculous sputum was placed on the carpet in a large room and allowed to dry and become ground up with the dust for two days. Guinea pigs were then placed at different distances from the floor and the dust stirred up, as in cleaning the room. Out of the forty-eight guinea pigs so exposed forty-seven became tuberculous.

Flügge has attached great importance to the fact that animals exposed to a fine spray of fluid, in which tubercle bacilli are suspended, develop tuberculosis much more constantly than those exposed to dried sputum. There are several factors here which should not be lost sight of in explaining this difference. In the first place it is highly probable that there are many more virulent bacilli floating in the air by atomizing a fluid in which tubercle bacilli are suspended than by stirring up dust. Kitasato showed that many of the tubercle bacilli are dead and have lost their virulence at the time the sputum is given off from the body. Drying undoubtedly kills great numbers and will eventually kill most of the pathogenic germs in sputum. From a numerical standpoint, therefore, the two methods can hardly be compared, as the spraying results in surcharging the air with virulent tubercle bacilli. Again, as Cornet has pointed out, the particles of dried sputum are very hygroscopic. As the inhaled air enters the lungs, it is probable that many of the dried particles lodge upon the mucous membrane of the nose and bronchial tubes, to be lashed by the cilia and discharged with the mucus. They do not pene-

trate to the deeper structures of the lung while the fine spray of cultures suspended in fluid readily enters the pulmonary alveoli.

Flügge has reached the conclusion that the disease is usually conveyed by the moist particles given off by the consumptives in coughing and not by inhaling the powdered dust of rooms which contain the dry tubercle bacilli. In support of this view, Flügge has shown that particles of moisture which may contain tubercle bacilli are given off by consumptives in coughing. These, however, are not projected farther than two meters from the patient.

Other observers (Engelman, B. Fraenkel, Heymann) have confirmed Flügge's observations in that small moist particles containing tubercle bacilli may be given off with the expiratory blast in coughing. It would seem, however, that the influence of these particles in disseminating the disease has been very greatly overestimated by Flügge and his associates.

In the first place, the small particles of moisture given off consist mostly of saliva and not of the viscid tenacious mucus which comes from the bronchial mucous membrane. The saliva does not always contain tubercle bacilli, and when they are present there are very few of them as compared with the myriads found in the mucopurulent discharge from the lung. Because Flügge and his followers, by taking a fluid culture of the bacillus prodigiosus in the mouth, were able to spread this organism to a distance of four or five meters about them by loud talking, coughing and sneezing, it does not follow that tuberculous patients disseminate tubercle bacilli in the same way. On the other hand, there is strong evidence against this view. Cornet first selected eighteen tuberculous patients who had abundant bacilli in the sputum and in whom violent coughing was required to dislodge the mucus. Sterile Petri dishes were held in front of the mouth during each act of coughing for one day. The particles of saliva were then washed off with sterile physiological salt solution and injected into guinea pigs. Only four out of the eighteen developed tuberculosis.

In another series of observations fifteen patients were selected because their cough was very loose, with abundant mucus in the

throat and the sputum was rich in tubercle bacilli. The particles of moisture were collected in the same way. Not one of the fifteen guinea pigs inoculated from this series died.

Dr. Curry of Boston obtained negative results in half his observations by holding glass plates at varying distances, from one to three feet, from the mouths of consumptives in the act of coughing.

Ravenel, by placing nose bags on tuberculous cows with severe cough, and allowing them to remain for several hours, was able to find tubercle bacilli in from one-half to two-thirds of the observations. However, by exposing fourteen guinea pigs to this spray in specially devised nose bags, for from two to twenty-seven hours on several consecutive days, not one of them developed tuberculosis.

The experiments of B. Fraenkel demonstrate very clearly how small a factor this atomizing of saliva by coughing is in spreading tuberculosis as compared with the danger of the sputum when the latter is allowed to dry. He had tuberculous patients wear masks for twenty-four hours at a time. With 200 of these masks, representing thirty-two days, he collected 2600 tubercle bacilli—an average of eighty-one for each day. Contrast that with the careful estimation of Nuttall that a patient with phthisis of moderate severity gives off from 300 millions to four and one-half billions in twenty-four hours. Heller estimates that a patient only coughing once an hour may give off as many as seven billions of tubercle bacilli in a single day.

Perhaps the most conclusive evidence to prove that tubercle bacilli are disseminated by the dried dust of rooms occupied by tuberculous patients, and not by the moisture expelled in coughing, is found in the experiments in which the dust of hospitals and private rooms has been injected into guinea pigs.

Cornet collected 147 samples of dust from various sources in Berlin, and after suspending these in sterile water injected them into about 400 guinea pigs. Nearly half of the animals died in a few days from septic infection caused by pyogenic bacteria. Of

those that survived this, 47 per cent developed tuberculosis when the dust was collected from hospitals in which tuberculous patients were treated without care in properly disposing of the sputum. When the dust was collected from private dwellings in which phthisical patients had been careless in allowing the sputum to dry in cuspidors and in handkerchiefs, 45 per cent of the guinea pigs developed tuberculosis.

On the other hand, thirty-five samples of dust collected from private houses, in which care had been taken to keep tuberculous sputum from drying, failed to show tuberculosis in a single guinea pig.

These results have been confirmed by Kirchner and others. In this country Hance, working in Trudeau's laboratory at Saranac Lake, has also obtained results which are in perfect harmony both in the positive and in the negative findings of the other experimenters. Hance collected the dust from the floors of the parlor, sitting room, library and seventeen of the cottages of the Saranac Sanitarium. These were inoculated into eighty-one guinea pigs. The rooms of the main building and sixteen of the cottages did not show any tubercle bacilli in the dust, but in one of the cottages they were abundant. Five out of the ten guinea pigs inoculated from this particular cottage developed tuberculosis. This room had been occupied by a man of unsound mind, who would not obey instructions for the proper disposal of his sputum.

The experiments with dust have been repeated sufficiently often (approximately 500 times) by independent investigators to justify definite conclusions. They show (1) that tuberculosis is contracted from the dried particles when the discharges are allowed to dry and become ground up in impalpable powder; (2) they show that there is no danger in coming in contact with tuberculous patients in rooms of patients who are careful to avoid such drying. It is a well established fact that the air exhaled from the lungs of tuberculous patients is free from the bacilli which cause this disease, and they can not be given off from a moist surface even when

a current of air is passing over or through sputum, as long as drying is prevented.

While it is true that tubercle bacilli may be given off in numbers in the fine spray caused by coughing, the importance of this means of disseminating these germs has doubtless been very greatly exaggerated. Flügge's contention that this is the usual method of conveying the disease from the sick to the well is certainly not justified. The only condition under which it might become of any importance would appear to be where a consumptive occupies one room for a long time. Even here it would appear to be a small factor in the infection of houses, if one may judge from the uniformly negative results obtained by Cornet, Kirchner and Hance, when the sputum was properly disposed of.

Tuberculosis is essentially a disease of house infection (*i. e.*, house or enclosure to include factories, etc.), and this is the most important fact to bear in mind in making any organized effort to combat it. If the infection of living, working and sleeping rooms can be prevented and those that are infected can be renovated and disinfected after the death or removal of a tuberculous patient, the spread of the disease can largely be stopped.

The valuable studies of Flick in Philadelphia and of Biggs in New York, showing the irrregular distribution of tuberculosis in certain houses while others remain free from it, prove conclusively that it is a disease of house infection. In one ward Biggs found that 56 per cent of the cases occur in 10 per cent of the houses; in another 7 per cent of the houses contained 44 per cent of the cases.

These observations also go a long way to negative Flügge's contention that tuberculosis is acquired by inhaling the moist particles given off by consumptives in coughing, since the infected houses are occupied by many families in succession, so that infection must have occurred from the dust, as there was no direct exposure. In his recent address before the Phipps Institute on the administrative control of tuberculosis, Biggs showed in a striking way that the rapid reduction in the tuberculosis mortality in

New York is largely due to the prevention of house infection. The history of tuberculosis in public institutions, as in asylums, is also in accord with this idea of the dissemination of the disease germs by dust. Tuberculosis is not conveyed by the dust of streets and of public buildings to the extent that is commonly imagined. Tubercle bacilli which are ground up with the dust of the street are largely destroyed by sunlight, putrefaction, etc. Many of them are washed by rain into the sewer. Street sweepers and drivers who are constantly inhaling this dust are remarkably free from tuberculosis. On the other hand, those who inhale the dust of factories, stores, offices and dwellings are especially liable to develop the disease.

Tuberculosis is probably seldom conveyed in railway coaches, as long as expectorating on the floors is prevented and the sputum is prevented from drying in cuspidors. In the first place, the consumptive only occupies the car such a short time that there is little opportunity for the infection of cars in the manner that houses, offices, factories, stores, etc., become infected, unless there is great carelessness in spitting. Again the exposure of the well to even a limited number of germs is of such short duration that there is hardly time for the disease to develop. In this connection it should be recalled that Kitasato found that a large proportion of the germs given off in the sputum are dead at the time they leave the body. It requires a prolonged exposure or repeated exposures to acquire tuberculosis. A single exposure does not cause infection, as is the case with the acute contagious diseases.

Without intending any criticism of the very efficient State Health Officer of this State, who is merely discharging the duties imposed upon him by the Legislature, the writer doubts the need or efficacy of the disinfection of sleeping cars and other railroad coaches now required by the law in this State. It is very proper that all public buildings should be provided with cuspidors; that the sputum should be prevented from drying in these, and disinfecting solutions may be used in them, if these do not form insoluble precipitates with albuminous discharges; it is also proper that

every care should be taken to avoid the stirring up of dust by sweeping and cleaning, when it is certain to be inhaled into the lungs of others. But it seems unreasonable to insist upon disinfection by fumigation of all sleeping cars when probably not more than one in twenty carries a consumptive, and even this small proportion need not become infected if the sputum is properly disposed of and not allowed to dry. A much more practical means of preventing the dissemination of tubercle bacilli in railway cars would be to impose a heavy penalty on those who carelessly expectorate on the floors and thus disregard all laws of hygiene, either through ignorance or carelessness. Who is to determine when day coaches become infected and require disinfection under the present law?

The law which requires the disinfection of railway coaches does not state that it is directed to the prevention of tuberculosis especially, but it is reasonable to suppose that it is, as patients with acute contagious diseases seldom travel, while consumptives do. This is evident from the report of the conference between the State Health Officer and the surgeons of the various railroads, as reported in the Texas Medical Journal last summer: "Texas is the Mecca to which thousands of persons afflicted with tuberculosis travel in hope of cure or betterment by the mild climate, and of course they infect the cars. The travel of consumptives on the Texas railroads in winter and spring is very heavy. The public must be protected from the poison given off by them. * * * When a car becomes infected with any of the acute contagious diseases, and is known to be infected, it is turned over to the quarantine officer at the nearest point of fumigation and cleansing before it is used again. *But the assumption is that upholstered cars, both day and sleeping, are infected all the time,* with tubercle bacilli especially, and to cause the removal of this and other dangers to the traveling public, as far as possible to do so, is the end and object of the law."

The assumption that all upholstered cars are infected or that every car in which a consumptive travels is infected is certainly

unwarranted. Tuberculosis is acquired in houses, offices, factories, etc., and not by traveling in railroad cars. To require the disinfection of all railroad cars and fail to make any effort to secure the registration of cases of tuberculosis and the renovation and disinfection of the rooms these patients occupy reminds one of straining at a gnat and swallowing a camel. The railroad cars which carry consumptives are only occupied a few hours or at most days; the rooms they live in are occupied for weeks, months, and years. It would seem just as reasonable to require the proprietors of hotels and boarding houses to disinfect every room each time it is vacated before it could be engaged again; or to require every landlord to fumigate his house each time it is vacated before it could be rented to another tenant.

All such measures are impracticable and attended with much unnecessary expense. The first thing to do in the prophylaxis of tuberculosis is to find what patients are tuberculous by establishing an accurate diagnosis at the earliest date possible in the course of the disease; the next thing is to locate these cases by requiring physicians to report them to the health authorities, just as they do cases of smallpox or other communicable diseases; then we should direct all our efforts to the instruction of tuberculosis patients and to the rooms they occupy, and not waste our energies on houses or railway cars that are not infected.

Perhaps the most urgent public health measure in regard to tuberculosis in this State is a law requiring all physicians to report the cases of tuberculosis to the local health authorities. The State should provide a State Bacteriologist, whose duty it should be to make free examinations of sputum for tubercle bacilli as well as of cultures for the recognition of diphtheria. By this method a diagnosis could be established early and the patient could then be instructed so that he would not infect others or reinfect himself. The records of these examinations could also be used to secure the registration of cases. In New York City over 11,000 cases were registered in 1903 from these examinations of sputum. The registration of all tuberculous patients must be the starting point of all

other sanitary regulations. This need not be attended with publicity, and there would not be any interference with private patients when the attending physician uses prophylactic measures. In other cases the patients should be visited by sanitary inspectors, and both verbal and printed instructions should be given to the patient for the proper disposal of the sputum under all circumstances. When houses are vacated either by the death or removal of patients, the room should be thoroughly disinfected and renovated, and this should be under the direction of the health authorities.

TUBERCULOSIS IN OUR PUBLIC INSTITUTIONS.

JAS. F. GREENWOOD, M. D., SAN ANTONIO.

In all institutions where people are confined either by occupation, religious orders, poverty, or the requirement of law, such as asylums or prisons, tuberculosis is a serious problem with which to deal. Under these conditions we have lowered vitality from lack of fresh air, poor food, exposure, and disease on one hand, and on the other, intimate contact of those already affected with tuberculosis, with the serious difficulty of taking proper precautions in the destruction of their infected sputum.

In an insane asylum a large percentage of our cases are demented, have little physical or nervous constitution, and are in constant danger of any infection, such as tuberculosis, pneumonia, or gastro-intestinal intoxication.

The acute cases are likewise in a state of lowered vitality, and present conditions favorable to infection with tubercle bacilli. These patients are in close contact with those already infected, whose expectorating on everything around them is almost impossible to prevent. This sputum, laden with tubercle bacilli, dries, becomes dust, blows about here and there, the wards become infected, and everything producing dust, like sweeping or dusting the furniture, stirs them up for all around to breathe, so that patients, attendants and physicians are in constant danger of contracting the disease.

The record at the Southwestern Insane Asylum is as follows: During the twelve years of its existence there have been 392 deaths, of which 85, or 21⅝ per cent were due to tuberculosis. Nine-tenths of our patients are between 20 and 55 years of age. Eleven-twelfths of our deaths from tuberculosis were at this age. The total death rate per 1000 living in the United States for this

age is about ten, of which four and four-tenths to four and eight-tenths is due to tuberculosis. In the asylum for these twelve years we have had an average yearly death rate per thousand, treated for this age, due to tuberculosis alone, of thirteen. This is more than from all diseases on the outside, and three times as many as are caused from tuberculosis alone in the United States for this age. During the first three years there were no deaths from tuberculosis; but, as the wards have become infected, the death rate from tuberculosis has increased, until it has averaged eighteen per thousand treated, for the last five years.

Table 1 gives the number of deaths each year, the number of these due to tuberculosis, the number treated, the percentage of deaths due to tuberculosis and the rate per thousand treated due to it. The average length of time in the asylum of those dying with tuberculosis has been three and one-half years, or over half were here from one to four years. Sixteen had been here under one year, and twenty-four for five years or over.

Table 2 gives the duration of their confinement in this asylum.

In the last twelve months on the female side we have had twenty-nine deaths, of which nine or 30 per cent were due to tuberculosis. This is nineteen per thousand treated. Of these nine, three died on ward C, and three more were sent from this ward to the hospital after the disease was contracted. Six of these nine cases therefore contracted the disease on this ward. This is the ward where our most demented cases are kept, and presents the most favorable conditions for contracting tuberculosis on account of the physical condition of the patients, and the difficulties of preventing those already affected from infecting the ward. Of these nine cases, eight were dementia, two being epileptic dementia, and this shows the influence of the lowered vitality in predisposing to contracting the disease.

On the male side we have had during the last twelve months twenty-eight deaths, of which eight were due to tuberculosis. Four contracted the disease on ward No. 7, a ward very similar to C in the character of its patients, and the other four on ward 4, where

about nine-tenths of the cases are dementia. Of these eight cases, eight were dementia.

At present we have six known cases of tuberculosis, all females, and all are at the hospital. Of these six cases, four contracted the disease on ward C, the same infected ward that has been responsible for so many cases. We have a few suspicious cases besides, where examination of sputum and physical signs are negative, yet a slight cough, some loss of weight, an evening rise of temperature, make us suspect them of having the disease.

Our methods of prevention are as follows: All cases as soon as diagnosed are sent to the hospital. Some few patients are too noisy and violent, and have to be kept on the wards; these are sent to ward C. At the hospital, when possible, patients are made to use spittoons, in which 5 per cent chloride of lime is kept. Clothing on which they have expectorated is removed at once. All clothing, sheets, etc., of these patients are put in separate bundles, sent to the laundry with directions to be boiled before opened. All these patients use separate cups and glasses. Mattresses are disinfected by exposure to 2 per cent formaldehyde gas for eight hours in a sealed room. The floor is washed with chloride of lime solution instead of sweeping.

We have had no known case of tuberculosis to develop at the hospital during the last year; so, considering the number of tubercular cases present, and the difficulties in attending them, our methods have been very successful.

On ward C we have made some radical changes. Any room in which a tubercular patient has been sleeping is disinfected. The clothes are sent to the laundry to be boiled. The mattress disinfected by exposure to formaldyhyde in a sealed room, the room, floor, walls and bedstead are washed with 5 per cent carbolic solution. All the mattresses and blankets, pictures, etc., on this ward have been exposed for six hours to formaldehyde gas. The walls and floors washed with 5 per cent carbolic. There are no rugs, carpets, or curtains to collect dust. The ward is swept with sawdust sprinkled over the floor beforehand. Often the floor is

scrubbed with chloride of lime or 5 per cent carbolic, instead of sweeping. All muco-purulent expectoration is watched for and examined for bacilli, and the patient examined, so as to be isolated at the earliest moment. During the day this ward is kept almost free from patients. They are usually at the park, but when they come back go out on a long gallery.

What we need is a special hospital for tubercular cases, so built that they are given plenty of fresh air, yet easily disinfected. Another important preventive measure would be a law requiring all cases admitted to be free from tuberculosis, as it is for other contagious diseases, as smallpox.

At present we have a law that no person laboring under an infectious or contagious disease shall be admitted to an asylum. Tuberculosis should be included in this classification, and no known case should be admitted until a separate hospital is provided, where they can receive proper attention, and yet not endanger the lives of others.

TABLE NO. 1.

Year to September 1.	Total deaths.	Deaths due to tuberculosis.	Average daily number of patients.	Number treated for year.	Per cent due to tuberculosis.	Per 1000 treated
1892	1					
1893	9		177	234		
1894	15		225	294		
1895	15	4	238	338	26	11.8
1896	15	4	271	361	251	11.1
1897	9	1	274	347	11	3
1898	18	3	274	331	16	9
1899	20	4	474	512	20	7.8
1900	86	13	704	894	15	14.5
1901	47	10	761	862	21	12
1902	67	17	745	915	25	18
1903	52	18	770	916	35	19
March 1, 1904	28	11	770	*920	40	25
Total	392	85		6474		

* For one-half year—460 for one year.

TABLE NO. 2.

Time in Asylum Before Death.

Few hours	1	1 year	6
1 month	2	2 years	12
2 months	2	3 years	10
3 months	4	4 years	10
4 months	4	5 years	4
6 months	1	6 years	3
9 months	2	7 years	1

TABLE NO. 3.

Number of Deaths From Tuberculosis in Twelve Years.

Age 15 to 20	3	Age 55 to 65	4
Age 20 to 25	12	Over 65	2
Age 25 to 35	24		
Age 35 to 40	20		
Age 45 to 55	12	Total	76

SECTION ON MEDICAL JURI SPRUDENCE.

1. Chairman's Address.
   G. H. Moody, M. D., San Antonio.
2. The Cause and Prevention of Rape—Sadism in the Negro.
   F. E. Daniel, M. D., Austin.
3. Physiologial Therapeutics in the Treatment of the Nervous and Insane.
   J. S. Turner, M. D., Terrell.
4. Some Aspects of Legislation in the Light of Modern Medical Science.
   H. L. Hilgartner, M. D., Austin.
5. The Etiology and Elimination of Crime.
   R. B. Sellers, M. D., Comanche.

CHAIRMAN'S ADDRESS.

G. H. MOODY, M. D., SAN ANTONIO.

While other branches of medicine have been making great progress, there has been much advancement along the lines of the modern care of the insane along the lines of psycho-physiological and pathological laboratory research, and along the lines of treatment, more especially of the acute psychoses. These three questions we will briefly consider.

1. *The Care of the Insane.*—All of us know more or less of the shameful neglect and irrational treatment of the insane of former days. With the chronic insane the question finally becomes one merely of care, and, generally, public care. This question is receiving the best efforts and thoughts of some of the best men in the world. Many improved methods are constantly being inaugurated, which adds to the pleasure and to the chances of recovery of this unfortunate class.

It was my pleasure last year to inspect many of the great institutions, both public and private, of Europe, as well as those of several of the Eastern States. For many reasons am I glad to have done this, and one is the extreme satisfaction it gives me to know of our own State institutions. We have just cause to be proud of them. There are indeed few, if any, public institutions in Europe in which the care and comforts of the patients are so constantly looked after, and in which the cleanliness of the wards and the beauty of the grounds are so well preserved. I do not believe there are any to be found in which there is more ability and more sincere effort being put forth in their management, nor do I believe our State will be fortunate enough to continue in its service at the heads of these institutions, at the present low salaries, men of such ability as at present fill them.

For the good of our unfortunate indigent insane, we, as a profession, should rise up as one man and demand of our law makers.

better pay for such services as are being rendered, and protest vigorously and uncompromisingly against the old-time custom in our State of making a position which is to minister to the care, comforts, and treatment of these most unfortunates one of political spoils. It is a disgrace to our State government to permit one of its subjects, no difference how prominent, to pay a debt—political debt though it may be—by taking from over these unfortunates a tried, faithful and capable man, to put in one untried, merely because he or his friends have been successful in helping win a political scramble. Purchasing patronage with money, though recently being much condemned, is a commendable act when compared to that of purchasing it at the cost of increased discomforts and possibly sufferings of such unfortunate humanity. Besides this, it is paid for indirectly with the State's money, for it costs money to train new officials. The wisdom of this change of policy is being felt in our State, as it has long since been proven in the Old Country and in the Eastern States, and recently our institutions have not been disturbed, with results which speak for themselves.

We should demand also better pay for them. They and their assistants are in close touch with scientific methods, and have an enthusiastic scientific spirit. Considerable scientific laboratory work is being done by them. All they need is increased assistance, with sufficient salaries to retain the best men, and additional equipments, they will keep pace with the rest of the world in scientific research work. This they are not now able to do, by reason of inadequate assistance.

2. *Recent Advancements in Psycho-Physiological and Pathological Laboratory Work.*—The laboratories of the Old Country show evidence of much labor and care. Besides a small laboratory for each institution, there is for each great city, or kingdom, or empire a regularly employed pathologist, who has in charge a centrally located laboratory for all its asylums.

Upon visiting the laboratories of the Scottish asylums at Edinburgh, I saw extensive experiments and investigations being made by the pathologist, Dr. Ford Robinson, demonstrating his theory

of the Klebs-Loeffier bacillus causation of paresis. These experiments seem conclusive, and I heard upon this point a lecture with exhibition of pathological specimens by the great Dr. Clouston, proclaiming Dr. Robinson's theory.

Dr. Hyslop of the Bethlehem asylum in London is making some interesting clinical observations, pointing to a prognosis in cases of acute insanity, through the sleep chart of the first few days of the mental illness. As long as the changes on the chart were decided, permanent damage had not been reached, but when the insomnia and nocturnal excitement is characterized by lack of irregularity, even though milder, the prognosis is bad, and the case could be expected to prove chronic. I saw many of these patients and their accompanying charts, and the observations promise good results.

Dr. Mott, the pathologist of the London asylums, was doing much investigating work upon the questions more especially concerning, first, asylum dysentery; second, the etiology, symptomatology and pathology of tabes and the tabetic form of paresis, showing that syphilis is the essential cause of these two forms of one and the same morbid process; third, on the general pathology of mental disease; fourth, the etiology and pathology of imbecility and idiocy; fifth, the alkalinity of the blood in epilepsy; sixth, the pathological changes in acute diphtheria toxemia, which serves to explain the fatal effects of this disease by heart failure being caused by degeneration of the neurones innervating the heart and forming a special center in the medulla; seventh, tuberculosis in asylums; eighth, cerebral syphilis, etc.

We need a complete and well-paid pathologist in the Texas State asylums.

3. *Modern Treatment of the Acute Psychoses.*—Kraeplin's late classification of mental diseases is a much needed advance step. He places the acute psychoses under five heads, viz.: exhaustion, infection, intoxication, thyroigenous, and involution psychoses. The name of each indicates its nature and causation. Exhaustion plays far the greater part in the causation of these psychoses. It

is present in a greater or less degree in them all. These conditions constitute the great majority of acute mental troubles met with by physicians in private practice. They should practically all recover if taken in hand early and properly nursed and treated. None of them are, properly speaking, insanity any more than is the delirium of typhoid fever, pneumonia, or acute alcoholism. To pronounce them insane means placing upon them and their relatives an unjust stigma. To place them in jail or to have them nursed by farm hands and by hysterical and neurasthenic relatives and friends means subjecting them to the probability of a quick death or a confirmed condition of insanity. This danger is still further favored by the necessity the physician finds of being forced by the indulgent family to give hypnotics and sedatives. In these cases metabolism is seriously disturbed, and the delicate brain structure and its coverings require prompt and careful steps that permanent damage may be evaded.

Their nursing, treatment, and attention should be as constant, painstaking and scientific as in typhoid fever or pneumonia patients. In addition to the minor merits of each individual case, the broad indications in the treatment of all these psychoses can be summed up under two heads: rest, nutrition. These met early and well, and almost invariably the patient will recover.

Rest is of first importance. To secure it properly drugs play a very minor part, and often a very harmful part. Of first and greatest importance is nursing. Trained nurses, graduated from general hospitals, are of no especial advantage in these cases. It is necessary that the nurse be trained in this special line of nursing, and such training is never complete. Daily instructions to them is important, and, as long as they do such nursing, hundreds of little things they learn by daily contact and precept which can not be taught them didactically. After proper nurse and proper surroundings are had, it is sometimes astonishing how little further is required to procure sleep and rest. I have many times recently seen this so plainly demonstrated by patients suffering from one or the other of these psychoses, whose relatives on bringing them

would complain that they had not slept for days or weeks, and from the very first night they slept well, and with much less hypnotics. The same is true as to their taking nourishment.

I have recently seen restored within a period of time varying from one to four months, four cases of exhaustion psychoses, two of intoxication psychoses, one of infection psychosis, and one of involution psychosis. Any one of them might at first have been diagnosed as insanity.

In giving hypnotics to induce sleep, the fewer the better. Trional and paraldehyde are probably the most desirable hypnotics in these cases. Prolonged tepid baths before bedtime, with proper massage, are often sufficient. Do not hesitate to continue the bath for two or three hours if need be.

Sleep being procured, rest in bed during the daytime is more easily obtained, and the irritability of exhaustion will begin to pass off and peaceful rest ensue. Nutrition then becomes much easier. Determine upon such diet as is permissible in the special case at hand, and give it to them in abundance. Good fresh milk, eggs, and fresh vegetables and bread are generally acceptable and desirable. Be sure they get sufficient. If you can not rely implicitly upon your nurse, see them eat yourself. People often think mere sipping and nibbling at the food means eating. When they do not eat the full amount, feed them milk and eggs with a stomach tube three times daily. Cold douches or the needle and shower bath in early morning, followed by brisk friction is most excellent for debilitated patients. Hydrotherapy is a most important remedial agent. Electricity, in the form best adapted to the individual patient, and more especially in the neurasthenic cases, is of great importance. The indications for internal medication are more especially tonics and reconstructives, together with such as are indicated by any existing diathesis or cachexia. Later considerations in these cases which are of vast importance are suitable gymnastic and outdoor exercise, recreation, pleasure, amusements, and mental occupation. These contribute to the completion of the restoration.

THE CAUSE AND PREVENTION OF RAPE.—SADISM IN THE NEGRO.

F. E. DANIEL, M. D., AUSTIN.

That attribute of our nature we call "love," and which, with civilized people, is the tie that binds the family and society, is the highest, noblest and most beautiful that actuates man. It is the mainspring of human ambition and endeavor. Upon it are founded marriage, home, the family and social order. It prompts to the acquisition of fame and fortune, the founding of the home, and the rearing of a family, the upbuilding of society and civilization. Its physical and psychic basis is that instinct which God has implanted in every animal creature, from the moneron to man, to insure a perpetuation of the species. Around this powerful and compelling impulse sentiment has woven the most beautiful and exalting emotion of the heart,—sympathy, friendship, affection, pity, mercy, and charity. It has been the theme of the poet in all ages. Stripped of these sentiments it stands revealed in the hideous form of lust,—animal desire, brute passion, as primitive man and his progenitors knew it,—like a rugged rock, around which, to conceal its monstrous form, nature has woven the tendrils and foliage and flowers of a beautiful clinging creeper. Divested of these refined and refining features, and unrestrained by the many inhibitions which society, law, religion, and ethics have placed upon it, it is a power for evil,—an unchained demon, a cyclone, an irresistible force which, in the history of the world and the evolution of man, has wrought untold woe and misery. I quote from that rare and curious book, Burton's *Anatomy of Melancholy* (1652). The author treats of this fundamental instinct as "Heroic Love," and says (p. 448):

"Love, indeed, first united provinces, built cities, and by a per-

petual generation, makes and preserves mankind, propagates the church; but if it rage, it is no more love, but burning lust, a disease, frenzy, madness, hell; * * * a vehement perturbation of the mind, a monster of nature. * * * It subverts kingdoms, overthrows cities, towns, families; mars, corrupts and makes a massacre of men. Thunder and lightning, wars, fires, plagues, have not done that mischief to mankind, as this burning lust, this brutish passion. Let Sodom and Gomorrah, Rome, Troy and Corinth, and I know not how many cities bear record, * * * and all succeeding ages will subscribe; * * * all histories are full of these basilisks. Besides those daily murders, effusion of blood, rapes, riots and immoderate expense to satisfy their lusts, bigamy, shame, loss, torture, punishment, disgrace, loathsome disease that proceeds from thence worse than pestilent fevers, torments the body, and that feral melancholy which crucifies the soul in this life and damns to everlasting torments in the world to come. Notwithstanding they know these and many such miseries, threats, tortures, will come upon them, * * * yet out of * * * a depraved nature, or love's tyranny, which so furiously rageth * * * they go down headlong to their own perdition; * * * they will commit folly with beasts, men, 'leaving the natural use of women,' as Paul sayeth (Romans 1:27), 'burned in lust one toward another, and man with man wrought filthiness.' * * * Solomon's wisdom was extinguished in this fire of lust. Samson's strength enervated, piety in Lot's daughters quite forgotten, gravity of priesthood in Eli's sons, reverend old age in the elders that would violate Susanna, filial duty in Absalom to his stepmother, brotherly love in Ammon toward his sister. Human,—divine laws,—precepts, exhortations, fear of God and man,—fair, foul means,—fame, fortune, shame, disgrace, honor, can not oppose, stave off or withstand the fury of it."

This instinct, being fundamental in man, as in all animals, and the most powerful, is, as would naturally be expected, subject to many and extreme aberrations; and these, being the expression of a disordered psychic state, have led, in all ages, to the gratification

of the desire by the most unnatural and revolting methods and practices.

It is only within recent years that these aberrations have been studied from a scientific standpoint, and their forensic importance, and the psychic relations they bear to other instincts and emotions pointed out, and a rational therapeusis suggested. It would be out of place here, and it is unnecessary, to enter into an analysis of them. Havelock-Ellis, Schrenck-Notzing, Kraft-Ebing, Moll, Kiernan and others have done that, and in their studies have revealed that they are psychopathologic, and come, often, properly within the domain of insanity. The revelations in these classical works will stagger the credulity of any but a student of sex psychology and psychopathology; much of it is so revolting that the authors feel obliged, in order to partly palliate the weakness and baseness of man, and not disgust the uninformed or chance reader, to veil many details in terms of the learned languages.

That there is a psychic relation, for instance, between lust and murder, between lust and cruelty, between lust and the religious emotion, between lust and music and art, is a fact, startling within itself. Further, that these emotions are in certain psychopathic organisms, inter-convertable, like the various forms of energy in the domain of physics, or co-existent in the same individual, and one may stand for the equivalent of the other; that the libido may find satisfaction, vicariously, at least to some extent, in the expression, gratification and vent of the associated emotion or impulse, is well established. It is more than a coincidence that most religious conversions occur about the time of puberty in both sexes, when the sex nature is developing and is strong, and repression necessary and enforced. We have to accept this psychic relation as a fact, without attempting an explanation of it. For that see the works mentioned; also Spencer (*Principles of Sociology*), Sanger (*History of Prostitution*), Ferri (*Criminal Anthropology*), etc. No fact is better established than that the infliction of pain—especially spanking, or flagellation on the nates, is a powerful excitant to sexual desire, a fact that is not known, but which should be known to teachers

and parents who inflict corporal punishment on children. It is demonstrably true that in some boys the first excitation of the sexual impulse is caused by spanking, even in very young children, —and they are thus incited to masturbation (Kraft-Ebing). The psychological relation of pain to sexual desire, and to the religious emotion, is illustrated in the practices of a religious sect in Southern Europe, known as the Flagellantes. It is a religious ceremony still practiced in France and other parts of Europe, for the devotees to pass in procession through the streets, stripped to the waist, each one armed with a whip with which he lashes the bare back of the one preceding him or her. Sanger says these emotional outbursts lead to great sexual excitement, and terminate in the indulgence of sexual excesses. Not only does the infliction of pain by the lash provoke the sexual impulse in the sufferer, but in some individuals it also powerfully arouses the libido in him or her who inflicts it, or even witnesses it. It increases the desire and intensifies the pleasure at the crisis; and it is for this abominable reason, Ellis says, that certain teachers (psychopathic) flog boys on their bare nates; and both Ellis, Kraft-Ebing, and Spencer tell us of an infamous "Judge Jeffries," an English magistrate, who habitually had women prisoners stripped and whipped, because it gave him sexual pleasure. In some of these unfortunate perverts, the sight of blood alone will both excite and satisfy the sexual desire; and in others is indispensable to satisfactory coitus.

It would seem that depravity and perverted sexual instinct could go no further; but Ellis, Kiernan and others point out a psychological relation between the libido and hunger, which, in extreme cases, leads to anthropophagy. That "Jack, the Ripper," was of this class is now generally believed, as well, perhaps, as was that mysterious murderer of young negro girls in Austin some years ago, in as much as in their victims no evidence of rape was found; but in the former case certain parts of the sexual system of the women were missing. Of this class, also, doubtless are those unfortunates who can have sexual pleasure only when they perform on their partners the functions attributed to the vampire. Sanger gives us

an account of a courtesan, famous (or infamous) in history, who became the type of this class of perverts. He says: "The most famous of all the *auletrides* (prostitutes; the flute players of ancient Athens) was Lamia, who, after being the delight of Alexandria and of King Ptolemy for some fifteen or twenty years, was taken, with the city, by Demetrius of Macedon, and raised to the rank of his mistress. She was forty years of age at this time, yet her skill was such that she ruled despotically her dissolute lover, and left a memorable name in Greek history. The ancients asserted that she owed her name Lamia, which was a sort of vampire or blood-sucker, to the most loathsome depravities." See also Plutarch's Life of Demetrius.

Tiberius and Nero, two of the most infamous of all the infamous Cæsars, are striking historical types of the lust murderer. They ravished and killed scores of very young girls, preserving the heads of the most beautiful, as we are informed by Sanger, and other authors. * * *

This horrible form of sexual perversion is known as "sadism." Dunglison and Gould define it to be, "sexual perversion which leads to rape, with circumstances of great violence and inhuman cruelty." A certain Marquis de Sade, who lived at the time of the French Revolution, was a modern type of the love and pain pervert. He devoted his time and prostituted his remarkable talents to writing the most revolting books, descriptive of his experiences in the gratification of his depraved sexual propensities by the most horrible and unnatural methods, descriptions doubtless colored somewhat by his imagination, as he wrote much of it while in prison. Science has bestowed his name upon that distressing form of sexual perversion. His case furnishes an illustration, too, of the fact, almost paradoxical, that such perversions are not confined to the naturally brutal, the coarse and vulgar, but may be conjoined to a highly intellectual and ethical nature, for, excepting sexual morals, his was both. He did much charity, and saved friends from the guillotine. It is to the credit of Napoleon that he caused all these and similar libidinous books to be burned. A popular knowledge

of this and other forms of perverted sexuality and abominable practices long antedated Sade, however. Many instances of sadism are to be found throughout human history—from the earliest recorded times. Moses legislated against certain sexual crimes prevalent in his day and known even to our jurisprudence. See the 18th chapter of Leviticus.

Ellis says the key to the psychic relation of love to pain and the monstrous acts of certain depraved men is found in animal courtship, meaning the combats between males for the possession of the female, in which a display of force and, doubtless, the sight of the blood of the vanquished is pleasing to the female, and stimulates in her a reciprocal desire. Ascending in the scale of animal evolution we come to the tribal state of primitive man, and find that with certain barbarous tribes it becomes a vital necessity, from the scarcity and difficulty of obtaining food, and the necessity of swift migration, often to escape hostile tribes, to sacrifice all girl babies and feeble adults to tribal safety. Out of this grew a scarcity of women and the necessity of capturing wives from other tribes (Exogenous Marriages—Spencer, Principles of Sociology, p. 622). In time it became a distinction to have a captured wife. It was a token of prowess, skill, and bravery. A survival of the custom is found today in the practices amongst certain low forms of man; *e. g.*, Spencer says: "A young Dyak must prove his bravery by bringing back the head of an enemy before he is permitted to marry. When the Apache warriors return unsuccessful, the women turn away from them with indifference and contempt. They are upbraided as cowards or for want of skill and courage, and are told that such men should not have wives." * * * "In a tribe containing many warriors who had wives taken from enemies, and who were regarded as more honorably married than the rest, there would result an ambition, if not to capture a wife, still to seem to capture a wife"; hence arose the mock capture of wives,—captured not from warriors of other tribes, but against the will of the woman and that of her parents in the same tribe. This form of capture is still practiced by barbarous people in Africa, in Australia,

amongst the Sinai Arabs, the Fuegians, and other uncivilized countries. Hence it is an easy gradation to the purchase of a wife from her parents, generally prevalent amongst savage and semi-civilized people—and to that semblance of capture—a play of mock capture prevalent today among many people as a part of the marriage ceremony. We see the shadow or reflection of it even among civilized people, in the game of "tag" between girls and boys, in which the boy must chase the girl, and, when caught, kiss her. By the bye, it is said by authorities cited that the kiss is the survival of the love bite, still practiced among certain races, notably the Esquimaux.

It is interesting and instructive to trace a custom back to its origin, as Spencer, Ellis, McLennan, Sir John Lubbock and others have done, in regard to the custom of mock capture of the bride as part of the marriage ceremony by many savages. It is not generally known, and I have the authority of Clifford Howard in his book, Sex Worship, for saying, that the emblems of the worship of Phallus and Priapus survive today in the gothic architecture of our churches, the spire, the windows and doors—the sanctum sanctorum or innermost holy, being significant of that religion which worshipped the generative organs as the source and origin of all life. The plumes on the hearse today, Spencer suggests, is an echo of the custom originating in feudal times, of carrying the knight's plumed helmet,—his arms and trappings,—on his favorite steed, at the head of his funeral procession.

Sadism is a survival of marriage by capture—as practiced by primitive man and his brute progenitors. Or, rather, it is atavistic. This view is held by Kiernan (Psychological Aspect of the Sexual Appetite. Alienist and Neurologist, April, 1891), citing whom, Kraft-Ebing says:

"Kiernan, who has several authorities in Anglo-American literature, starts from the assumption of several naturalists (Dollinger, Drysdale, et al.) which conceive, the so-called conjunction—a sexual act, in certain low forms of animal life, to be cannabalism, a devouring of the partner in the act. He brings into immediate con-

nection with this the well-known facts that at the time of sexual union crabs tear limbs from their bodies, and spiders bite off the heads of the males, and other sadistic acts performed by rutting animals with their consorts.* From this he passes to lust murder and other lustful acts of cruelty in man, and assumes that hunger and the sexual appetite are, in their origin, identical; that the sexual cannabalism of lower forms of animal life has an influence on the higher forms and in man, and that sadism is an example of avatism."

* * * * * * * * * * *

The American negro is only a few generations removed from savagery. Naturally the brute instinct is strong in him, and unrestrained by influences which keep it in abeyance in civilized countries, measurably, at least, it will express itself in those acts of which we have been speaking. In recent years it seems, as Burton has said of ancient times, that even the fear of the fagot, to say nothing of other forms of capital punishment, is powerless to prevent those horrible lust murders of children by negroes. The cause, in my judgment, is sadism, a reversion to the type of a not remote ancestry. There are contributory causes to be presently mentioned. As a slave, the negro was in ignorance and complete subjection. The law recognized no rights on the part of a slave. The law and the lash kept him in subjection, while on plantations every facility for the gratification of his lust was afforded with women of his kind, for breeding slaves was a profitable business. Marriage amongst them was encouraged. There was no perversion of the sexual sense. The males did not desire the white women, nor dream of ravishing the white children. The whites to whom he belonged were immeasurably above and beyond him, and he no more dreamt of social equality with them than with the angels.

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*The female of that familiar winged insect, the "Devil's Horse" (*Hymenoptera; mantis religiosa*), devours the male after the conjunction, and the queen bee flies away with the drone she has selected to fertilize her for the next generation of workers (*le vol nuptial*). After fecundation she rips open the abdomen of the male and serenely scatters his intestines to the wind.

Freed from these restraints, only partly educated, lazy, often idle and dissipated, frequenting low drinking dives and vile haunts of vice, corrupt and bad, allowed to associate with dissolute white women,—some of them dream of social rights and equality. He has been told by fanatics that he is as good as the white rebels to whom his parents belonged, and their descendants; race hatred is engendered, and despite torture and certain death staring him in the face, the rape fiend, the negro sadist, wreaks his vengeance and spite on some innocent child and gratifies, in that unnatural manner, his abominable lust. In how far the example set by the Chief Executive of the United States in socially recognizing the negro may have encouraged the rape fiend, and thus been a factor in the increase of the crime, it is hard to say; but it is not unreasonable to say that doubtless it has given an impetus to both hatred of the whites and desire for revenge, the more so, perhaps, because the illustrious exemplar of negro equality is himself a grandson of a distinguished slave-owning aristocrat of the Old South.

So much, then, for the cause of rape by negroes.

We of the South are confronted with this horrible problem: There have been forcibly turned loose upon us some millions of blacks, who, however, for the most part, are orderly, industrious and well behaved, and who are entitled to the respect and encouragement of all right-thinking people. There are amongst them, however, individuals in whom there exists that form of sexual perversion we have been describing, and other forms that lead to sexual crimes besides rape. I have endeavored to assign a cause for it; now, is there a remedy? The title of my paper is, "The Cause and Prevention of Rape." I do not say that there is a remedy, or that it can be prevented or cured; but I do say that hanging and burning at the stake have signally failed to check the evil. Indeed, I venture the belief that by "suggestion," it has rather tended to increase it. Haslam, an English authority, says, that of 167 persons executed in England, all but one had witnessed an execution. The horrible execution by fire of the negro lust

murderer, Henry Smith, at Paris, Texas, must have been known to every black in Texas, yet within a week there occurred other assaults by negroes on white girls only a little less revolting. Right here in Austin, shortly after the occurrence mentioned, a negro was hanged in the jail yard for rape of a 13-year-old white girl at Webberville. The physician who attended her testified to the horrible mutilation of the child. She survived, however, and under our laws, had to appear in court and exhibit her shame, humiliation and suffering. This is as disgraceful as it is absurd, and in itself constitutes some justification of lynching. The negroes were allowed to hold so-called religious services on the scaffold. The preacher told the assembled blacks and scattering whites that "Brother" Nichols (the culprit) had found forgiveness; that his soul had been washed white in the blood of the Lamb, and that he was going from this vale of tears, where the white man never ceases from troubling and the good darkey can not rest, straight to the bosom of God! The black cap was adjusted and he was launched into eternity to the tune of "Nearer My God to Thee," sung by a hundred black throats. This is no fancy sketch, but an actual occurrence right here at the capital of a great State, the seat of the University, and the home of scores of Christian churches. Imagine the effect of such a scene and teaching upon the ignorant and superstitious negro. What does it "suggest?" Go thou and do likewise and go to glory! It is a premium on rape, a golden harp in the realms of the blest. Is such calculated to lessen the prevalence of this horrible crime?

Nor are the proposed remedies likely to be more effectual. I mean that proposed by John Temple Graves, colonizing the negro, separating the races. It is utterly impracticable and undesirable. The great majority of the negroes are inoffensive and are useful,—indispensable in the South as laborers. Justice Brewer's proposed remedy for rape and its consequences (lynching) is almost puerile. He proposes that in rape trials there shall be no appeal; but a swift execution, to satisfy the outraged people. Why have a trial? It is a farce in those cases where the evidence is conclusive, *prima facie;*

the death of the fiend has already been determined upon. Indeed, the lust murderer is outside the pale of the law. He has no rights that should be respected. He is a monster, a unit dangerous to society, and should be eliminated. The question of "responsibility,"—granting that sadism is a form of insanity—cuts no figure. He should be killed—with as little ceremony as a community would put to death any other deadly animal—say a man-eating tiger, for instance, loose in their midst, or a rattlesnake. There should be no vengeance, no torturing, of course; no one would think of torturing a bull or dog or tiger, or snake; he should simply be killed, and the outraged community, for its own protection, should do it, without the farce of a trial, in cases in which there is no doubt of the crime and the identity of the criminal. A judicial investigation is for the purpose of ascertaining if the accused is guilty, and if guilty to fix the penalty. In every case where there is the least doubt, either of the identity of the accused or of the crime, there should be an investigation, but where there is no doubt as to either, why subject the victim, most frequently a tender young girl, to the shame, mortification and suffering incident thereto, and the State to the expense? In less horrible cases of sexual crimes,—such as are recognized by jurisprudence and are evidence of sexual perversion *exempli gratia*, sodomy, buggery, pederasty,—upon conviction before a court, the offender should be rendered forever incapable of a repetition of the act, and of reproducing his kind, in whom the taint would most probably survive. This should be done by a surgeon, upon order of the court, and there should be a law upon our statute books authorizing it. I do not mean simply the removal of the glands, for while that destroys the power of procreation, it in no degree lessens the libido or the power of erection and penetration. See Havelock Ellis on this subject. It would carry this paper beyond the limits of time at my disposal to enter upon a discussion of this phase of my subject. The remedy should consist of the ablation of the entire genital apparatus, for, as stated, castration does not remove the impulse nor the power, and Ellis says that

"certain Roman ladies greatly affect this style of eunuch for obvious reasons; *vult futui Gallia, non parere.*"

Our esteemed fellow citizen, Judge A. W. Terrell, ex-minister to Turkey, says that when the Arab slave dealers are returning from Africa with slaves they have bought or stolen or captured for the Constantinople market, they camp by a river where there is a sand-bar. Holes are dug in the wet sand into which the males are buried up to the chin, after having the entire external genitalia removed with one sweep of a sharp knife. Wet sand is then packed down firmly around the wretch, and if he does not bleed to death, as they frequently do, when he is taken out (in about a week) he is a true eunuch worth $500.

Seeing that prevalent methods of dealing with rapists are unavailing; that proposed remedies are impracticable or likely to be useless, I really think it would be "worth while" to try asexualization in all cases of attempted rape where there has been no penetration, and in all established cases of sexual perversion which has been expressed in unnatural acts of gratification. For the successful rapist,—white or black,—and for the rape-murderer, death, swift and without pity or remorse. The preservation of self and the protection of home are man's highest instincts and first duty.

I really belive that this measure will do more to check the evil of criminal assault than anything else. A negro values the "witnesses of manhood" more than life, and would give up life with less reluctance. The fear of the loss of those possessions would have more terror and more restraining influence on his acquaintances, and on the evil disposed—and the moral effect would be greater than that of shooting, hanging, or death at the stake. It is the only rational remedy. It is based on science, and will be at once, punitive, curative and preventive,—perhaps.

DISCUSSION.

DR. G. A. TROTT, Georgetown: I have a few words to say about the paper. I have for a long time thought that the remedy suggested is the only remedy which will prove efficacious. Whether they are whites or

blacks, they are nothing but vultures. In their minds there is no difference between notoriety and fame, and because of the talk which their deeds occasion, they are heroes in their own eyes, and in the eyes of those people who are their fellows. It is true that the negro is as well satisfied with notoriety, whether it be for evil or good, as he would be with a seat on the highest pinnacle of fame. In the remedy suggested, there is no possibility of the man being made a hero in his own eyes, or in the eyes of others, but only an object of contempt and ridicule. Such a sentence as that would do more good than any other punishment. I think that until such a law can be passed, those who are guilty of such offenses should be put to death quickly. They should not be allowed to know that they receive commendation from anyone; they should not be allowed to receive flowers, etc. If there are religious ceremonies, they should be in the strict privacy of the cell.

DR. J. W. CARHART, Austin: I have known the views of Dr. Daniel for several years on this subject, and I heartily endorse them. I believe that the remedy suggested would be the most effective remedy that could be devised, and do not think that we should stand back on account of sentiment. I have given some attention to this subject myself, and am prepared to say that I do not think this tendency to revert is confined to the black race entirely; sometimes we find it among the whites. You will remember the fearful crime that was committed some years ago in San Francisco, the murder of two young ladies. This was a case of sadism, pure and simple. I have had some experience with the black rapist and sadist. There is something in the negro that seems to see a gratification in being made the center of attraction in even so odious an affair. Recently a negro who was to be hung asked permission to speak, and he seemed to be elated at the fact that he was the center of interest on that occasion. Notwithstanding the steps which have heretofore been taken to arrest these crimes, they seem to be increasing in frequency in our midst. I am glad that this paper has been read. I am opposed to public religious exercises in connection with executions by hanging. I am in favor of all religious consolation to the condemned, but let such services be offered in the privacy of the criminal's cell.

DR. F. E. DANIEL, closing: I will just add one word. The statement which I made about the hanging of the negro here may seem incredible to some of you. In the columns of the Statesman of that date, you will find related the facts as I have reported them, reported by an eye-witness.

PHYSIOLOGICAL THERAPEUTICS IN THE TREATMENT OF THE NERVOUS AND INSANE.

J. S. TURNER, M. D., TERRELL.

Dr. W. W. Godding, deceased, formerly superintendent of the governmental hospital for insane, Washington, D. C., in his annual report for 1897 wrote: "There is an acknowledged lack of somatic therapeutic agents for the active treatment of insanity. This lack extends to the treatment of diseases of the nervous system generally and is equally felt by our brethren the neurologists. The most skillful employment of drugs for the control of morbid processes in the nervous system, and especially in the brain, in the present state of knowledge leaves much to be desired."

Physiological therapeutics in a great measure fills the place of "that much to be desired" and now occupies an important place in the treatment of the insane, and in my opinion will continue to do so as we become more and more acquainted with its proper application.

We are often asked the question "if we give medicine continuously to our patients?" meaning internal medicine; and, when we answer the question in the negative, the next question propounded is "how do you hope to cure them without medication?" Then follows the necessary explanation that, while we always give internal medication as indicated, and it is usually indicated in all the acute and in many chronic cases, yet we do not give it continuously to the greater part of our insane, but find that in a larger number of cases giving medicine internally is justified only as their immediate condition demands; in this class of cases we must rely largely on hygienic treatment for the results. I do not wish to be understood as in any wise disparaging the proper use of internal medication in the treatment of the insane, but wish to call atten-

tion to the benefits to be derived from the proper and rational application of physiological therapeutics.

If we eliminated the systematic course of baths, the proper dieting, the regular exercise in the open air, the regular hours for retiring, arising and in fact the regulation of all the personal habits, together with the moral influences exercised by the physician, the supervisor, and the nurse, depending entirely upon internal medication, I think our rate of restoration would fall far below the present standard, so also would our rate of restoration be much decreased if we tried to ignore internal medication and treat alone with the physiological forms of therapeutics, as is attempted by some who claim to be physicians and practice the art of healing. Hence, we see the need of both; but, as the need of internal medication is already well established, I shall be content to point out some of the methods of physiological therapeutics that, in my judgment, add much to the result of the treatment in many forms of insanity. The inability to carry out this important feature of treatment is the occasion for failure of results in many cases treated outside of regular insane hospitals—the equipment necessary together with experienced aid to apply the same only being found in properly equipped institutions.

After making a thorough examination and careful diagnosis, the following will be found among the most important features of physiological treatment, and are given in the order of their importance. First, dietetics or alimentation. We can expect but little result from any form of treatment without a rational and well ordered dietary. The idiosyncrasy of the patient must be observed, and only such foods ordered as will be properly appropriated by the digestive apparatus, taking into consideration any special or organic disease that may exist, such as chronic or acute nephritis, heart lesions, the disorders of the digestive tract itself or any of the numerous organic diseases that would demand a special form or diet. After determining the course of the dietary, it is important to enforce the strictest regularity in feeding. Have regular hours for meals if patient is sufficiently convalescent or strong

enough to take meals at the regular intervals, and, if weak, the greater the importance of regular feeding; the intervals should be shortened, and the patient given small quantities of easily assimilable foods, either of liquid or semi-solid food. Milk is almost a universal diet in these cases, and is strongly commended. Do not permit the appetite to dictate the character, quantity, or regularity of the diet, as by so doing great harm may be done. Appetite is, as a rule, as unstable as the imagination. I have seen at least one patient who suffered from an organic heart lesion die from eating a large quantity of bananas. It is also very important that the food be properly cooked and served. Much food that otherwise would be very wholesome is often rendered unfit for use, especially with the nervous and sick, by improper preparation.

Environment or the immediate surrounding and associates of the patients have much to do with their progress. The surroundings should be made as pleasant as possible; the rooms, halls, alcoves, and every nook and corner about the hospital and wards should be scrupulously clean and made to present a fresh and inviting appearance. There should be all forms of diverting and harmless amusement within easy reach; there should be music, games, pictures, ornamental surroundings indoors, comfortable beds, chairs, couches, swings, and appropriate furniture should be found in abundance, and on the grounds adjacent there should be nice shady groves, walks, seats, and arbors, flowers, ornamental shrubbery, fountains, aquariums, zoological parks, and such other things as would entertain or tend to detract the mind from morbid delusions and hallucinations.

The associates should be of the most congenial character; hence the great care necessary to be taken in the proper classification of the insane where they are congregated in large numbers on open wards. Proper classification of a ward assists in restoring order and quietude; improper classification creates pandemonium. The nurses and attendants should be constantly admonished and made to understand that much depends upon their conduct toward the

patient, and that they are a potent factor for good or evil in the ultimate results of the case.

Exercise and rest perform important parts in the treatment of the nervous and insane. In many cases open air and moderate exercise soon bring about an equilibrium in the nerve centers, sleep, appetite, and digestion are induced, and the patient is restored; in other classes of cases absolute rest in bed is required to assist in the restoration of exhausted centers. It is good practice, where possible, to place every insane or nervous patient in bed for a week and closely observe the symptoms, at the end of which time we are able to determine the proper course to pursue in the case.

Hydrotherapy, massage, and Swedish movements are indispensable for the welfare of many patients. Within the class yielding to this form of treatment are the neurasthenics, hysterics, and those suffering from psychoses having an unstable nervous organization as a basis. Baths are not only valuable as a sanitary and hygienic routine, but the various forms of baths of varying temperature are of much therapeutic value, as is also the use of water internally administered. I have seen many excited patients yield to a warm bath of thirty minutes' duration followed by a glass of hot milk and a good brisk mitten rub or coarse towel massage; becoming quiet and often getting a good night's rest and sleep. Have seen some favorable results from the cold pack in robust patients where a state of subacute mania persisted. The vapor and hot-air cabinets are valuable in many forms of disease where rapid elimination is necessary.

Dr. Frederick Peterson, president of the New York State Lunacy Commission, wrote as follows in the American Journal of the Medical Sciences for February, 1893: "In my tour of inspection of asylums for the insane in Germany, Holland, France, Belgium, Italy, and Austria in the winter of 1886-'87, I was surprised to find how universally hydrotherapy was employed in the treatment of certain conditions in insanity, and with what excellent results."

Dr. E. C. Dent, superintendent Manhattan State Hospital, West,

Ward's Island, New York City, N. Y., wrote as follows in his annual report for 1901: "The use of sedatives and hypnotics is to a great extent supplanted by the employment of hydriatic procedures and daily out-door exercise. * * * The results obtained from these agents are most gratifying, and warrant me in heartily commending their use."

Dr. Foster, superintendent of the Eastern Maine insane asylum, wrote as follows in a paper entitled "Hydric Treatment in the Insane," published in the American Journal of Insanity, April, 1899: "Our text-books dealing with treatment have an increasing number of references to hydrotherapy, especially in connection with nervous disorders. Those who lead the thought and practice of the profession are practically unanimous in their favorable attitude toward it, and this good opinion is gradually extending to the ranks. * * * It is, moreover, not too much to assert that, under a very wide range of application, its action is prompt, certain, and safe beyond that of most remedies."

Electrotherapy is becoming more and more understood, and as its mysteries are revealed to us its sphere of usefulness seems to widen. Electricity rationally applied has become one of the stable elements in physiological therapeutics. It is now claimed that proper application of a mild interrupted current not only acts as a stimulant and tonic to the nervous system, but that marked results have been obtained in cerebral hyperemia, gummata and epilepsy. Hughes, in a recent work on "Neurological Practice of Medicine," says: "Epilepsy is by no means the inevitably incurable disease it has been ultimately proclaimed by men of authority of the past in medicine. I have had many epileptics recover under persistent cephalic galvanization, coupled with long-continued treatment over several years." Much is now claimed by a recent school of practitioners for mechanical vibration in the treatment of mental and nervous diseases. At the head of this class is Maurice F. Pilgrim, A. B., M. D., of New York City. They claim that by a properly constructed instrument vibration can be applied to the nervous system and great good result. The favorite point of application

in many diseases is between the transverse processes of the cervical vertebra. They claim that this mechanical vibratory stroke is either stimulative, sedative, or inhibitory, owing to the mode and strength of its application. In speaking of it at the medical society of the Borough of the Bronx, New York, Dr. Pilgrim said: "Mechanical vibration is not claimed to be a panacea, gentlemen, for all human ills. Neither is it recommended as an *exclusive* system of treatment. It is not contended that all results above enumerated will certainly and absolutely follow its correct application to every properly selected case. It does not aspire to accomplish the indefinite postponement of senile degeneration or to abolish the process of death of the physical body. But, gentlemen, after having critically employed it almost daily for the past eight months in clinical work, which embraced all phases of diseased bodily conditions, and in large numbers, I have now to say that I know of no other *single physical agent* that will accomplish as many of the above epitomized results, or as often and with as few failures as that concerning which I have had the honor and pleasure of speaking to you tonight."

In this connection I desire to speak of and commend suggestion, but in doing so I do not wish to be understood as commending that form of suggestion that is often called hypnotism, but the "direct" and "indirect" suggestion of Dercum. That form of suggestion that is practiced by every well qualified and properly informed physician.

We all know the effect upon the patient of a visit from his physician, and more especially are his words eagerly received and weighed if the patient has great confidence in him. As that is true of the sane, it is even more so of the insane who are suffering from mild or subacute types of psychoses or are convalescent. The direct suggestion from the physician that the patient "will be well and able to return home in a short time" is often the best tonic that can be administered to a depressed patient, and if candor—which should ever be practiced with the insane—compels a more guarded assurance, this indirect suggestion even is often helpful.

Be guarded in conversation with your patients, as you do not know what harm may follow even an indirect suggestion inadvertently conveyed.

Restraint, not the mechanical restraint of the olden days, when straight-jackets, lock-beds, lock-chairs, muffs, airing-courts, etc., were used, but the stronger intelligent restraint of moral suasion. The restraint of the intelligent nurse or attendant who has been taught in a proper training-school or otherwise how and when to exercise the restraint over a patient. Restraint is absolutely necessary in the treatment of the insane, and should be exercised, but in a proper manner.

Individualization.—It is not probable that all the therapeutic agents above mentioned would ever be used in a given case; but, in the wide range of mental and nervous diseases, I dare say not a single case would present itself in which one or more of them would not be found beneficial. The time allotted me is too short and the magnitude of the subject too great for more than a general discussion of the subject in this paper. Each subdivision is of sufficient importance to make a book of many pages when particulars are properly treated. As each case is known to be "a law unto itself," so must we consider each case individually; and, in order to do that, we must have an institution properly constructed and equipped for so doing. The older institutions were, as a rule, built after the monasteric style of architecture, economy and custodial care being the principal objects. With such institutions a complete course of physiological therapy is difficult. The more modern institution, built in recent years by the State, and many psychopathic hospitals throughout the country are prepared to give this treament.

The proper construction in my judgment is the cottage plan, where patients can be classified for treatment and otherwise into proper and small groups of twenty-five or less, having their necessary cooking, eating, and living conveniences as would be found in a large and well-regulated family. These modern hospitals have properly equipped departments which contain the necessary appa-

ratus and instruments to carry out this treatment in a systematic and scientific manner. In my opinion, the time is fast approaching when our State institutions will be as well equipped as any in the country. They are better than many now. The degree of their future usefulness depends upon a continuation of the policy established during the last administration of our State government, and continued, fostered, and encouraged by the present. I refer to the elimination of politics and the encouragement of reasonable and liberal appropriations for the institutions.

It is indeed encouraging to those of us engaged in this special work to see the interest that is being manifested in these unfortunates by our lay and professional brethren, especially by those who are in position to further the cause; for to carry out properly the treatment of the nervous or insane is a very arduous task, and, unless the physician or nurse take more than a passing interest, the work is likely to suffer, hence the need of encouragement. But where is the man or woman who has an ounce of the "milk of human kindness" within them who would not become interested in a work that takes poor, deluded, nervous, and mental wrecks and in a short time transforms them into reasonable creatures? I have seen the wife and mother come into the institution a raving maniac, with hair disheveled, clothing torn, and form and features emaciated until they would scarcely be recognized as human beings; after a few weeks or months of treatment reason would be restored, the motherly instincts would return, and the refined lady, wife, and mother becomes herself again, rejoicing as she returns to her home and loved ones. Gentlemen, who would not become interested in such work?

DISCUSSION.

DR. JOHN PUNTON, Kansas City, Mo.: I want to say that I think the profession of Texas are to be congratulated upon the fact that the superintendents of their institutions think enough of their professional brethren to come and take part in the meeting of the State society. This is a new departure, and one not very long in force. I remember, not many years ago, when it was an unusual thing to find a superintendent of a State institu-

tion at a meeting of the medical society. I think it a very hopeful sign of the times when a man with such vast clinical opportunities will give us the benefits of his experience. I was exceedingly interested in this paper, because I believe it strikes the nail on the head. My experience teaches me that too much is expected from the use of drugs in the treatment of the insane. We lean altogether too heavily upon drugs. I am glad that Dr. Turner recognizes the physiological importance of hygiene in the treatment of the insane. I believe that, if the general practitioner realized the importance of this paper and all that it contains, the percentage of recoveries would be increased. That, after all, is what is wanted. Who can go to a State institution and walk through its wards and not be touched by the thought which has been expressed by some of the authorities that seven-tenths of the insane in our institutions are there because of the failure to provide proper treatment for the patient during the early development of the case. The importance of treating insanity properly in its incipiency should be emphasized, and, when this is done, there should be 60 per cent to 75 per cent of recoveries. I think that epilepsy is about as incurable a condition as we come in contact with when it is complicated with insanity, and, if the importance of the remarks contained in the paper will sink deep into the hearts of the general practitioner, who sees these cases early before they become complicated, we may hope to have a larger percentage of recoveries.

DR. TURNER, closing: I thank Dr. Punton very much for discussing my paper. In regard to Dr. Hughes' statement, I will say that I have not treated epileptics with electricity as described.

SOME ASPECTS OF LEGISLATION IN THE LIGHT OF MODERN MEDICAL SCIENCE.

H. L. HILGARTNER, M. D., AUSTIN.

This subject chosen is connected with politics to some degree. Criticisms might follow, on account of a prevailing opinion that doctors should not mix up with politics. I can not answer better than offer certain suggestions, in the main adapted from a paper entitled "The Doctor in Politics," by Chas. A. L. Reed, of Cincinnati, which recently appeared in the Journal of the American Medical Association.

"What are we to recognize as the relationship, natural or otherwise, between doctors and politics? That the two are related in a more or less fundamental way becomes at least vaguely apparent when we reflect on the general unity of things; when we realize that nothing exists that is not related to something else, and this, in turn, to still something else, and so on until all things—arts, science, life itself—are bound together in an indissoluble whole. The constitution of the social fabric, of which the doctor is an integral element, furnishes a special application of this generalization. But we may discern the more intimate character of this relationship, and get at the subject rather more directly by observing, first, that the relationships of the doctor, in point of knowledge, are as the relationships of his science; for example, his knowledge of human structure and of human function gives him a clear conception of structure and function, and the correlation of the two in every phase of organic life; while his study of vital phenomena, as modified by conditions, his accumulation, comparison and classification of facts enable him to arrive at a conception of natural law, of which all constitutional or statutory laws are but attempted adaptations. We make another

approach to the subject if we consider that the relations of the doctor are as the special relations of his profession. Those relations touch specifically all infractions of the natural laws that govern human existence, and afford him a viewpoint that commands a wide horizon; that enable him to see when social customs are evil, when economic conditions are disastrous, when religious vagaries are homicidal, when political disturbances are detrimental, *and when scientific credulity is murderous.* Knowing these things, with his fingers literally on the pulse of the individual, he, in a figurative sense, can feel the throbbings of the community and can discern when it is the victim of undue depression, or of equally dangerous excitation. Such general social functions of the physician are knowledged in questions of military sanitation, or of threatened invasion of our shores by foreign epidemics, or of the protection of our commerce from pestilential influences; but there are still more intimate civic relations of the doctor that carry with them responsibilities and duties from which, in a republic, no degree of devotion to professional labors can be pleaded in exemption.

"Notwithstanding such truths there does exist both within the profession and among the people a prejudice against the doctor's participation in any activities not involved in the routine of his daily labors. The prejudice seems to be based largely on the old saw which admonishes the shoemaker to stick to his last, a saying that has acted as an impediment to progress through centuries. The fact is that the doctor who knows nothing but medical science, who has no knowledge of the correlated branches of knowledge, can know but little of his special science; that the doctor who knows nothing about the social organism, nothing about the interdependence of different elements of society, can know but little about his own profession. I believe that many doctors realizing the general truth for which I am contending, cultivate something—religion, science, art, literature, legitimate sport, or even politics—as a means of broadening their intelligence, widen their humanity and extend their influence.

"But I am not here to discuss the whole range of a doctor's

extra-professional activities, but only to turn attention to the duties and opportunities of our profession in respect to participation in politics—in the high sense of the word. Whenever I think of this subject my fancy reverts to the example of Haller, who is revered as one of the foremost men in the history of his country, and who, poet, litterateur, botanist, general scientist, and for years a legislator, was, in the midst of it all, the foremost practitioner of medicine in his day and generation. We may gather inspiration, too, from the example of Virchow, the little Pomeranian, who for forty years was a member of the Prussian Diet; who for a number of years served also in the German Reichstag; who, while struggling for German unity, fought for human rights against the tyrannical tendencies, alternately of Metternich and Bismarck; who cultivated the modern languages, English, French, Italian, and Arabic; who, delving at Troy, became an original investigator in archæology; who, by patient study, established the science of ethnology; who, by his researches in pathology, laid the foundation of modern medical science; and who combined with these other qualities that of a successful practitioner in the wards of the Charité.

"Turning to our own country, think of the twenty-two physicians who were members of the Provincial Congress of Massachusetts in 1774-'75, participating in all the formative measures of that political body. It was Dr. Samuel Prescott of Concord who took that daring midnight ride with Paul Revere. The martyrdom of Warren might be mentioned; and, if time permitted, we might trace the footprints of the five immortal doctors who, as members of the Continental Congress, signed the Declaration of Independence; Josiah Bartlett and Matthew Thornton of New Hampshire, Oliver Wolcott of Connecticut, Lyman Hall of Georgia and Benjamin Rush of Pennsylvania, the last eminent also in education and philosophy, and so eminent as the leading practitioner of medicine in his day that this next year, a century after his death, the medical profession of America will make a pilgrimage to Washington to unveil a monument to him as its foremost representative in our

national history. There is interest, too, in the fact that William Henry Harrison, distinguished alike as scholar, diplomatist, soldier, statesman and Chief Executive of the United States, received his first broad views of life as a student of medicine."

But passing from such conspicuous, not to say heroic examples, recalled to us by Dr. Reed's appeal, passing by the hundreds of instances of prominent services rendered by medical men in Congress, in our Legislatures, in executive offices, in military and diplomatic services, there is another, perhaps still more useful type of doctor, who may be found anywhere, in the fashionable quarter, in the manufacturing city, in the quiet country town, in the mining camp, in the prairie hamlet. One may think of him in his library, where anatomy and art, therapeutics and theology, bacteriology and biography are well intermingled. With his medical journals come the literary magazines and the newspapers, from which he gleans the freshest thought and goes forth day by day with quickened step and cheerful countenance fulfilling, in some measure, the ideal doctor. He is the man who, for instance, writes to his legislative representative: "The pending bill for increasing the power and scope of the board of public health is a good one. I trust you will vote for it and for the necessary appropriation to carry it into effect."

Before mentioning some things that need to be done, let me briefly refer to some that have been accomplished. International Sanitary Conventions have been held, Public Health Associations and State Sanitary Conferences have been established, water and food supplies have been subjected to inspection, dwellings have been made to conform, somewhat, to sanitary requirements, hygiene has been introduced as a study into the public schools, and, above all, the people have been taught to think on the great question of sane living. The net result has been that morbidity and mortality have alike been lessened. The span of life, according to Mulhall statistics, has been lengthened six years since 1880. But, although a great deal has been accomplished, we can record only the beginning of progress. The time at my disposal will allow me

to mention merely the most glaring of the subjects which demand attention. The improvements which have been noted as the result of intelligent legislation elsewhere have unfortunately only a very limited reference to Texas.

Some States have passed beneficial laws which our Legislature would do well to consider. The most conspicuous field for work lies in the management of contagious and infectious diseases. For example, we know typhoid fever is a preventable disease. To guard against that malady, first of all the water supply demands constant inspection. Milk also should be specifically inspected, and the method of milk inspection is important. I would suggest for cities some such method as is practiced in Vienna, namely, that all milk be brought to a central station, under governmental control, having suitable laboratories and the necessary experts to carry out thorough sterilization of the milk, after which the milk would be dispensed to the public under severe penalties for tampering with it. Similar suggestions apply to the inspection of some other foods. In order to carry out any such plan, it would be necessary that a food commission should make proper investigations and determine the requisite expense of the protective measures adopted.

In regard to smallpox, the public is already more or less familiar with methods of isolating, and willing to apply them.

Yellow fever is a disease which, owing to recent investigations, deserves special mention. If the mosquito theory is correct, and there is hardly any doubt that the disease is largely communicated by the host, the need of proper measures to exterminate this dangerous medium becomes apparent.

We may next consider the alarming increase of blindness in the United States, due to a disease commonly known as "baby's sore eyes." Ophthalmia neonatorum is the cause, according to Magnus, of 23.5 per cent of blindness in Europe among persons under twenty years of age; of 10.87 per cent of all blindness; of 14.51 per cent of blindness in New York State; of 17.5 per cent in Maryland; 15.7 per cent in Texas. This disease is entirely preventable

and curable—certainly in 98 per cent of all cases. The important questions which present themselves are: First. Why does ophthalmia neonatorum continue to cause so much blindness? Second. What can be done to prevent further increase in blindness from this source?

The answer to the first question, as given by Dr. Woods, is ignorance; ignorance of its great danger on the part of parents; ignorance on the part of the midwives, and sometimes ignorance on the part of medical attendants.

The first practical question is, what means can be adopted to bring children infected by the disease as soon as possible to the notice of a competent physician? Private attempts to educate the laity have been unavailing, and urging nurses equally insufficient. The surest and best means is undoubtedly legislation. This is the view taken by those who have studied the subject most carefully. Following a plan which had been in part previously adopted in Switzerland, a concise and explicit bill for the proper protection of infants was passed by the New York Legislature in 1890, without a dissenting vote, and became a law at once. The State of Maine was the second to pass such a law, and Rhode Island the third State to have such a law. Several other States have enacted similar laws. The disease is rarely seen outside the circles of the poor. The problem to solve is, how to protect babies of the poor? children who are born under the care of medical men who do not realize the dangers of infantile ophthalmia, or of midwives who may never have heard of it. The Eye Infirmary of Sheffield, England, distributes among the poor, by means of the poor physicians, the following card:

Important Notice.—If a baby's eyes run with matter and look red a few days after birth, take it at once to a doctor. Delay is dangerous, and one or both eyes may be destroyed if not treated immediately.

The distribution of such cards by the health authorities would accomplish much good, but the difficulties in connection with midwives would still remain. Our laws require nothing but self-con-

fidence on the woman's part to entitle her to a license. These women attend many more poor women in confinement than do physicians, and they are interested in covering up their mistakes. In various parts of Europe, Saxony, Austria, Prussia, etc., there are laws of more or less stringency regulating the licensing of these women, compelling them to know Crede's method before obtaining their licenses, and to use it in practice. A law of this kind makes a nurse appreciate her responsibility, and insures her knowledge of the fact that the condition indicated by the redness and discharge in the newly-born is not to be trifled with. It being evident that such legislation ought to be enacted, it is the duty of every one of us at once to take the necessary steps for the adoption of a suitable law in the State of Texas.

Legislation which would at least *notify* parents of the defects in vision and in hearing, discovered by the proper examination of school children, would save incalculable misery and economic waste; and no even seeming rational objection can be imagined to a law which would provide suitable means for such examination and report.

The disinfection of public buildings and thoroughfares seems also an indispensable benefit, without the least reasonable objection.

It would make these remarks too lengthy to attempt to catalogue the many proper and unobjectionable applications of the governmental theory thus suggested, and I shall mention only one more specific point. Owing to the ever-increasing death rate of tuberculosis, that direful malady requires particular mention. When we realize that statistics give us the information that even in countries which, in former years, were never affected with tuberculosis, a large proportion of the inhabitants die with the disease, the necessity of providing preventive measures becomes apparent. The south of France furnishes an example in point. That region has been used for 200 years, or more, as a resort for consumptives, with the result that within recent years one-third of the population has been affected by the disease. It has been discovered that the soil,

in damp places, is largely infected with the bacillus of tuberculosis. In the face of such conditions, it behooves any civilized government to consider some ways and means of reducing the danger of life from this source. In my opinion, nothing short of the isolation of such cases, in the most favorable locality, with the proper treatment, will accomplish the desired results. I realize that from a legislative point of view this is a most difficult question to deal with, and I am not one to insist on action until a clear way can be shown.

This concluding point needs to be emphasized, namely, that legislation ought not to attempt in any field any measures which are not clear and settled in effect and thoroughly practicable in execution.

Temperance is a cardinal virtue here, as in every other sphere. As a conspicuous example of fanatical extreme, may be mentioned the various proposals that have been made from time to time to give to marriage boards, or some such officials, discretionary powers to grant marriage licenses and to prohibit marriage. Some tyrannical theorizers going to outrageous extremes in their suggested preventives of procreation. The question of individual fitness to procreate seems to me, as a general proposition, too obscure and complex for human arbitration. It would require not only knowledge yet unobtained, but also indefinite wisdom to be the arbitrator of proposed marriages without acting a travesty upon science, and without committing outrages upon liberty, justice and the eternal fitness of things.

THE ETIOLOGY AND ELIMINATION OF CRIME.

R. B. SELLERS, M. D., COMANCHE.

Representing so large and ever-increasing part of our population, the criminal has become a very important factor in the State's government, and so important it seems to me that the physicians of Texas should deem it their duty to help as far as it is in their power to overcome the evils which cause crime, and eliminate it if possible from the domain of our State. To do this they must study its etiology, note its relation to insanity—if there be a heredity in crime—as well as in disease, and whether caused by a mental defect in the criminal or due to the surroundings wherein he was brought up.

With crime and insanity on the increase out of proportion to the growth of our population, as is shown by the annual reports of the penitentiaries and asylums; with every jail full; with hundreds on the county farms; with about 4000 convicts in the State prisons; with over 3500 insane in the asylums, and many knocking impatiently for admittance; with men and women being adjudged insane faster than the State can build hospitals, we have before us a picture of the deepest sorrow and a subject for the profoundest thought.

While crime must hold a place of its own, separate and distinct from insanity, yet we must admit they often go hand in hand. To one of normal mental and moral organization, it is a mystery how a well-balanced mind could be guilty of crime, knowing how quickly the change from sanity to insanity may take place, when responsibility of action ends and irresponsibility begins.

If a man knows the difference between right and wrong and is unable to resist the wrong and do the right, he is responsible for his actions. Why should a man commit a crime when he knows he is violating the law, and with a strong probability of sooner or

later being made to suffer the penalty? He studies over it, broods over it, makes it a part of his life, until he becomes convinced that he can carry it through without detection. He loses all moral self-control, his reasoning becomes abnormal, illogical, criminal. "Crime is a violation of law, either human or divine, or the commission of an act forbidden by law"; and any one guilty of such an offense, be he sane or insane, is a criminal.

That class known as the criminal insane will not be considered in this paper, only those whom the law holds responsible for their actions, and confines in our jails and penitentiaries.

A close study of criminology shows you a class of individuals distinct in themselves, the great majority of whom come from the lower plane of social and moral life; a class on which poverty, vice, idleness, intemperance, ignorance, and heredity have left their stamp, a large percentage being negroes and foreigners, or children of foreign parentage.

Inheritance, ignorance, and their every-day surroundings make a criminal. The stain of a criminal may be in a man's blood for generations back; it may have lain dormant in his parents and develop in him. His grandparents, uncles, or great uncles may have been thieves, and it awaits his coming to carry it further along. Crime is an education in one senses, and a lack of education in another. In cities such as London, Paris, New York, Chicago, and Philadelphia, there are schools for teaching crime; children are taught the deft art of picking pockets and all manner of petty thieving. Dickens, in "Oliver Twist," draws vividly a picture of this, where children were stolen and taught by "Old Fagin" to make their living by thieving, and if caught were punished. The Spartans encouraged stealing among their sons, but with a distinct understanding that they must not be detected. The object of reformatories for boys who go wrong, as a means of punishment, is also that young criminals be kept away from those hardened by years of crime; the penitentiaries thus acting as a school weherin the older criminal became the teacher.

In the rogues' gallery of any large city you may see a group of

photographs showing the wonderful effects on individuals of heredity and abnormal surroundings. In State prisons, especially those of the East where the foreign population is much greater than in Texas, this same type of individuals is seen among the convicts, the majority of them having physical defects such as asymmetrical heads, misshapen ears, abnormally developed features which point to a degeneracy inherited from parents of similar types.

The lack of education and occupation play important rôles in the etiology of crime. It is an established fact that the great majority of criminals are uneducated and have no special occupation or trade, their surroundings making them criminals. I have prepared some very interesting statistics along this line that I obtained from the last report of the penitentiaries of this State. Of the 3865 convicts in prison at the time of the report, 1157 had some trade or profession, while 2780 were without trade or profession. Among those having a means of support, 220 were farmers; 188 cooks and waiters; 69 barbers; 61 carpenters; 45 painters, and 39 blacksmiths, the balance being distributed to all branches of trade, while only 61 of the entire number were classed among the professions. As to education, there was not one of the entire number in prison who had a collegiate education. One thousand nine hundred and fifty were absolutely illiterate. Shall we seek further the etiology of crime?

Under the classification of crime, the most important incentive is gain,—the desire for personal benefit without the ordinary methods of hard work,—and causes more criminals than all the rest combined. It includes the burglar, the robber, the highwayman, the embezzler, and the common thief. A glance at the penitentiary report shows that of the 3865 convicts in Texas prisons in 1902, 984 were convicted for burglary, and 1105 for robbery and theft; a total of 2089 who became convicts for personal gain; nor does this include those convicted for murder, where in some cases no doubt robbery, burglary, or theft was the original design.

Degeneracy, the second classification, holds a very close place to that of gain. Poverty breeds degeneracy, and degeneracy breeds

crime. Crowded in poor quarters, without any means of support, the foreign population, especially in our cities, gives us ample proof of the effects of poverty and degeneracy. In this State criminals differ some as to race from those of the East and West, where the great foreign population is such a menace. With us *now* it is the negro, ignorant, trifling, unreliable, and a degenerate.

The prison population of this State in 1902 was as follows: One thousand two hundred and twenty-four whites, of which 426 were foreigners, leaving 798 born in this country, and of this number we do not know how many had parents of foreign birth; 2192 were negroes, and 448 Mexicans, showing that the negro nearly doubles the number of white convicts. But this condition of affairs will materially change as our State grows rapidly in population. With the building of the Panama canal and the extending of deep-water ports, Texas will bid against the Eastern seaports for her share of foreign population. With this must came the riffraff and scum of Europe and the Eastern World, bringing its anarchy, ignorance and poverty, and we will expereience—as the East does today—the fearful conflict between labor and capital. The handling of this low grade of humanity is one of the great problems that confronts this government.

The State commission of lunacy of New York in its last annual report says: "During the last three months of the fiscal year 1902 48,445 immigrants, being 44 per cent of all arriving at United States ports, named New York State as their future permanent abiding place. Of the total arrivals during this period more than one-half were Southern Italians, and 21,578 of the Hebrew race. When it is considered that relatively few of these immigrants find themselves upon debarking endowed either with worldly goods, friends, or a knowledge of the country or its language, it is not difficult to understand why the annual admissions to the city asylums of New York should be comprised of from 66 to 75 per cent of aliens."

The State commission of prisons of New York in their last report says that between 1895 and 1903, a period of eight years,

there were admitted to all prisons in that State a total of 102,581 men and women charged with crime; of this number 35 to 40 per cent were foreign, and no record is made of those whose parents were of foreign birth, which no doubt was large. Ignorant of the laws and customs of this country, this class of people filled with their own peculiar ideas of government and socialism, coming to us friendless, moneyless, and homeless, it is no wonder that so great a number are sent to prison and the asylums. This is the great problem that confronts us today, the elimination of this class of immigrants, which means the elimination of a powerful factor for crime.

Crime can not be completely eradicated from our State; there will always be men who will violate the law, but it can be greatly reduced, and will be, when the people of this Commonwealth realize the importance of this vital point.

Ignorance, intemperance, and heredity form the germ from which crime is generated; to do away with these is to do away with crime. As the great majority of criminals of this State are under 35 years of age, as shown by the reports of the penitentiaries, the solution of this problem must be made through the youths of coming generations. Of the 3865 convicts in this State, 677 were under 28 years of age, 1128 from 20 and under 25, 763 from 25 and under 30, and 537 from 30 and under 35, or a total of 3105 under 35 years of age. To overcome these conditions will take years of patient work along the lines of education and the enactment of proper laws governing immigration and marriage.

As to education: In the first place it should be compulsory, as it is today in some European countries; it should be broad and practical, embodying in its course the various trades and occupations whereby each student should be taught the necessity of directing his mind and energies to the one trade or occupation best suited to his liking. Liberal education is the great lever whereby our moral conditions can be elevated. By liberal education is meant that form of learning which enables a man to better his condition; shows him what to do and how to do it. Not the limited knowl-

edge of reading, writing, arithmetic, grammar, and geography, which is all the learning the masses have; but with these the practical studies suited for each individual, such as mechanical, civil and electrical engineering, railroading, telegraphy, agriculture, etc., embracing all the legitimate trades of man. By this kind of education the young men of our country will feel themselves qualified to fill any place in their special line of work. By this means the race problem will be settled, and the negro will be transformed from the idle, unreliable, degenerate that he is today to an industrious, peaceable, and trustworthy workman. This country being called the "land of the free and the home of the brave," has carried the "open-door" policy too far for its own moral good; by it the offscourings of the world are pouring in on us each year in appalling numbers, bringing with them their poverty, ignorance, disease, and moral degeneracy, which not only unfits them for citizenship, but permits them to instill and teach their worthlessness and crime to the young men and boys of this country.

No factor in the causation of crime plays a more important rôle than does heredity; by it each succeeding generation afflicted with a moral or physical taint continues to grow, until in each new offspring the disease takes a more lasting, a deeper hold; the parent or grandparent having neurasthenia or hysteria, the present representative may develop insanity in any form; even so with crime.

To carry forward to a successful end this movement of elimination of crime begun by education and restricted immigration, this hereditary growth of mental and moral defcts must be overcome; and this can only be accomplished by stringent laws governing marriage. Meeting as they will such fierce opposition by the people, such laws will be slow of formulating, but this is the means to the end, and the people will have to be educated to it. No man or woman should be permitted to marry if either has been convicted of crime prompted by personal gain or through degeneracy. Marriage should be prohibited when either party has at any time been confined in an asylum, or known to be an epileptic, of unsound

mind, or a moral pervert. The cause of this is apparent, but the technicalities of such a law will not be discussed at this time.

And now to the part the physician plays in this important question. He is a leader, a reformer, and advocate of all moral and scientific movements which tend to benefit man. The great sanitary movements the world over are due to his untiring interest in humanity. To him crime in all its hideousness, degeneracy with all of its loathsomeness, disease with all of its sufferings and sorrows, are everyday pictures. Then on him will devolve the starting of this moral uplifting, this universal and broad-minded education, this elimination of crime. He must talk the matter over freely with his brother physicians, must try year after year to have laws enacted which in the end will reach the climax of perfection, even as it has in the sanitary and medical laws recently adopted by this State as a result of his patient and persistent efforts. To this end let us work, *"lest we forget—lest we forget."*

SECTION ON OPHTHALMOLOGY, OTOLOGY, RHINOLOGY AND LARYNGOLOGY.

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A CASE OF EMPYEMA OF FRONTAL SINUSES WITH DESTRUCTION OF ONE EYE—ABSENCE OF SEPTUM.

BRUCE RICHARDSON, M. D., BEAUMONT.

In reporting the following case of frontal sinus suppuration, I believe that I am presenting for your consideration a few points of somewhat unusual occurrence. Anatomically, it offers two points of interest: one the extraordinary size of the cavities, and the other the unusual condition of the septum, which will be discussed at greater length later. The extensive involvement of the eye is also a point of some importance.

The history of the case is as follows: Martin L., aged 17, presented himself at the Sisters' Hospital on October 6, 1903, with, as he thought, a suppurating disease of the eye.

Previous History.—Had always been in good health up to five years ago, when he had a severe attack of scarlet fever. Had a milk attack of measles when 10 years old, and, excepting malaria of a mild type, has never been sick before. Following scarlet fever he frequently had headaches, upper lid would become swollen and red, particularly in the inner third. During these attacks, by snuffing soap and water up the nose, a discharge of bloody, foul-smelling scabs would follow with relief to the headaches. The patient all the time remained in good health and suffered no inconvenience aside from the headaches until February of last year, when he was seized with a most severe pain in the head, requiring large and repeated doses of opium, from which he received only partial relief. The pain continued for three days, when, to use his own words, "something broke" in the nose, and discharged about a half pint of bloody, bad-smelling fluid. This was immediately followed by relief. Two days later the discharge also appeared above the eye. A week or ten days later the whole left

side of his head became swollen and edematous. The patient was directed by his attending physician to keep the pus pressed out by stroking the scalp from behind towards the opening above the eye. This evidently did not afford ample drainage, as he informed me that later it was incised farther back. The scar indicating a point above and behind the mastoid. A large quantity of pus was evacuated. The right eye never presented any symptoms.

On examination at the hospital, the following conditions were noted: There was complete staphyloma of the left cornea—the upper lid markedly everted. The eye bathed in pus, which was flowing in liberal quantities from a fistula about the middle of the outer third of the orbital margin just below the eyebrow. A probe passed into the fistula was freely movable in all directions and passed without any difficulty well over and beyond the median line. Not being prepared for a thorough examination of the nasal cavities, I did not look farther into the condition, but directed him to report at my office later. Here I had no trouble in passing a fine silver probe as far over as the middle of the right eye. On rhinoscopic examination both nostrils were found quite free in the region of the lower meatus. In fact, the patient did not complain of any nasal symptoms except a slightly excessive discharge and obstruction whenever he was suffering from a cold in the head. The upper part of each nasal cavity was filled with thick, yellowish pus and soft polypoid tissue. Everywhere in the region of the ethmoid, dead bone could be detected. All these conditions were more marked on the left eye. Temperature and pulse normal.

The following day the anterior half of the middle turbinate and the ethmoid curetted as thoroughly as possible. A week later the opposite side was dealt with in a similar manner. Attempts were made at each sitting to pass a canula into the fronto-nasal duct, but without success.

On November 13th, having gained consent to the radical operation, patient was anesthetized with chloroform, Dr. Barr assisting. A free incision was made commencing at the inner canthus of the left eye and extending externally to the fistula in the outer third.

The cellular tissue of the orbit was carefully explored without finding any pus. The fistulous opening in the bone was enlarged, the anterior wall partially removed as far inward as the median line. The cavity was of unusual size, extending upwards for one and one-half inches, outwards to the outer angle of the orbit and back almost an inch or more. The cavity was completely filled with dark polypoid granulations, and the odor was very foul. A probe passed in the direction of the right eye nowhere encountered any sign of a dividing septum, and was easily made to pass as far as the external angle of the right orbit. No marked irregularity or pockets were found in the sinus. The cavity was thoroughly curretted, and as much of the right side as possible was cleaned through the same opening. The opening of the fronto-nasal duct was with some difficulty found, the canal being very small. This was enlarged, and the ethmoid again curetted through the opening.

Owing to the great vascularity of the soft parts, the very intimate attachment of the periosteum, and the extreme hardness of the bone, our progress was somewhat hampered. The patient at this stage not being in the best condition, the wound was packed with iodoform gauze, and the opening of the opposite side delayed until some later time.

On December 2d, the right sinus was operated on. The fronto-nasal duct enlarged, and the ethmoid curretted as in the previous operation. The cavity was about the same size as the left sinus, but more irregular. A prominent ridge or bone springing from the floor of the sinus about its center and running diagonally back divided the floor into two almost equal parts. This was the only structure encountered that could in any way be compared to a septum, but, should such be assumed to be the case, then we would have an extremely large left sinus communicating by two openings to the nose—one to the right, the other to the left nasal chamber. Such seems to me very improbable, as in my study of the anatomy of the parts I am unable to find any fact bearing out any such conclusion. Logan Turner, in speaking of a similar condition, says: "In two instances I have seen a single sinus occupy the

whole frontal area immediately above the roof of the nose, and extending from one supra-orbital margin to the other. In one case the sinus was the right, in the other the left frontal sinus, and in each instance the sinuses communicated by a single orifice with the nasal chamber at one side." These two cases are illustrated in plate 17 in his book, "Accessory Sinuses of the Nose," and in explanation of the figures he writes: "In figure 2 the whole cavity represents the left frontal sinus, there being no communication with the right nasal chamber. There is no true septum in this case; the partition seen in the figure is merely a buttress passing between the anterior and posterior walls of the sinus. It is incomplete in its lower part; the aperture being indicated by the large arrow passing from right to left. The smaller arrow is entering the left osteum frontale through which both compartments communicate with the left nasal chamber. One is justified in regarding this as the correct explanation of the condition, because of the absence of an osteum frontale upon the right side. Had the latter been present in association with a similar opening on the left side, there would have been good reasons for regarding the existing partition as an incomplete true septum intervening between the right and left sinus. Only one conclusion seems reasonable, and that is that the ridge is one so frequently met with in the frontal sinus, and is in no way comparable to a septum.

That the absence of a septum is one of congenital defect is not at all probable. Such an anomaly is of the rarest occurrence. Regarding such a condition Turner says: "I have never found it incomplete in a normal skull," although this does not agree with all observers. Lathrop, after remarking on the constancy of the septum, says: "An examination of 180 specimens has revealed two examples; one an oval perforation near the center of the septum, the other its almost entire absence." As far as I know, no case of congenital absence of the septum has been reported.

The most plausible explanation of the septum deficiency is that of the destruction due to the suppurative process going on in the

sinus. In view of the fact that the outer walls of the sinus—a bone of much greater thickness than the septum—gave way to the excessive pressure from within forming a fistula, it seems quite reasonable to suppose that the thin, delicate septum gave way first, and that the remaining portions ultimately sloughed off. The destruction of the eye, due to ulceration of the cornea and later complete staphyloma, is sufficiently important to deserve mention as a possible danger of empyema of the accessory sinuses.

SYMPATHETIC OPHTHALMIA.

W. A. HARPER, M. D., AUSTIN.

Sympathetic ophthalmia is an affection that often fails to occur when we most expect it, and, on the other hand, may occur when we little expect it.

More than 80 per cent of these cases are caused by traumatism. Perforating wounds or ulcers of the cornea resulting in incarceration of the iris; operations, such as extraction of cataracts, sclerotomy, iridectomy, pressure of an artificial eye in which nerves are imbedded in the stump are some of the special conditions which may result in sympathetic inflammation. The immediate exciting cause is, most probably, micro-organisms introduced into the eye.

From two weeks to forty years is the indefinite period requisite for the development of this disease, but usually is develops within a period of four to eight weeks. It may occur, however, as early as forty-eight hours after the exciting injury.

Children and young adults seem to be the most susceptible to this condition, but this is probably due, says Fox, to the fact that they are more exposed to its causes.

Prophylactic treatment is almost our only dependence in this disease. Treatment after the prodromal period is almost certain to result in partial or complete failure, hence the great importance of being thoroughly familiar with not only the early prodromal symptoms, but also with the conditions which may lead up to symptoms and later to thorough development of sympathetic inflammation.

Prodromal symptoms are many and varied; among them being photophobia, asthenopia, lachrymation, blepharospasm, impaired accommodation, contraction of the field of vision, various color sensations, pain and tenderness in the ciliary region, neuralgia

along the course of the fifth nerve, vitrious opacities, etc. Oscillating movements of the pupil may be noticed and are said to be last of the prodromal symptoms, immediately preceding the appearance of actual sympathetic inflammation.

Unfortunately these warning symptoms do not always present themselves, or may not be observed. A fully developed inflammation may be the first symptom observed in the sympathizing eye; hence again we must emphasize the importance of a thorough acquaintance with the character of wounds or diseases which, existing in one eye, may result in serious sympathetic trouble in the other.

An irido-cyclitis in one, from any cause, is quite sufficient to create a feeling of intense anxiety as regards sympathetic trouble in the other eye. Every injury, traumatic or not, affecting the region of the ciliary body may well be watched with suspicion. If the injured tissues have healed, a careful examination should be made to see if there be an incarceration of the iris or ciliary body, as in either of these conditions the patient should be thoroughly impressed with the importance of reporting promptly at the first appearance of soreness or redness in either eye, impairment of vision, sensitiveness to pressure, or any symptoms likely to indicate a re-awakening of the original trouble or a development of a new in the unimpaired eye.

A foreign body in the eye seldom becomes encysted, and if all practicable means for its removal have been resorted to without success, then enucleation must be performed, or in the absence of prominent symptoms clearly demanding an immediate operation, or where the consent for this radical operation can not be secured from patient and relatives, then our only recourse is to warn them of the danger and instruct them what to do under certain conditions, should they arise. Of course, if we can have the patient in the hospital, or under our observation, not so much will depend on the judgment and common sense of the patient.

A wound or diseased condition located in the cornea or anywhere within the "danger zone" of the sclera (within one-quarter

of an inch of the cornea) carries with it a special danger to the iris and ciliary body, and should be watched and cared for with this fact in mind.

Mild cases of sympathetic inflammation are rare, and to use the exact words of Fuchs on this subject: "Since severe cases are by far the most frequent, sympathetic irido-cyclitis must be regarded as one of the most serious forms of inflammation of the eye, and as one which almost always terminates in blindness."

It is often a difficult problem to decide whether or not an immediate radical operation is demanded or justified. De Schweinitz gives the following rules as a guide in determining this matter: "Enucleation, or one of its substitutes, should be performed on (1) an eye with a wound so situated as to involve the ciliary region, and so extensive as to destroy sight immediately, or to make its ultimate destruction by inflammation of the iris or ciliary body reasonably certain. (2) An eye with a wound in this region already complicated by severe inflammation of the iris or ciliary body, even if sight is not destroyed; or an eye containing a foreign body which judicious efforts have failed to extract, and in which severe iritis is present, even if sight is not destroyed. (3) An eye, the vision of which has been destroyed by plastic irido-cyclitis, or one which has atrophied or shrunken, provided there be tenderness on pressure in the ciliary region and attacks of recurring irritation; or without waiting for signs of irritation. (4) An eye, the sight of which has been destroyed, even though sympathetic inflammation has begun in the sympathizing eye, in the hope of removing a source of irritation, and thus rendering treatment to the second eye more effectual. (5) An eye in which a wound has involved the cornea, iris or ciliary region, either with or without injury to the lens, and in which persistent sympathetic irritation in the fellow eye has occurred, or in which there have been repeated relapses of sympathetic irritation. (6) An eye either primarily lost by injury or in a state of atrophy, associated with signs of sympathetic irritation in the fellow eye."

No set of rules can be given that will guide us literally under all

the various circumstances arising in cases of this character. We can only act in accordance with our best judgment, profiting as far as possible by the experience of others, watching carefully for each and every symptom, and at the same time realizing its significance and importance.

ABSCESS OF THE BRAIN FROM OTITIS MEDIA—OPERATION.

E. D. CAPPS, M. D., FORT WORTH.

As it was formerly believed, at least by a majority of the profession in the South, that malaria played a more or less important rôle in most diseases accompanied by fever, so nowadays, during what we might term the "grippe" season, does la grippe modify or cause many acute or infectious fevers. The grippe germ seems to be capable of developing in almost any tissue of the body. With each year we observe the return of this disease, usually in the fall or winter season, taking on a type every year different from that of the previous year. One year it will affect principally the mucous membrane of the air passages, next perhaps that of the digestive tract, then again the nervous system will be mostly involved, striking here and there, making its pathology as uncertain as the disease is itself.

During the months of December, 1903, and January and February, 1904, in my home city we had a great deal of sickness in the form mostly of scarlet fever, measles, whooping cough, pneumonia, and last but not the least la grippe, either alone or accompanying these other diseases, and it is the latter fact I believe that accounts for the large number of middle-ear afflictions which have accompanied or followed particularly the scarlet fever and measles. We well know that the former disease is especially a cause of throat and middle-ear inflammation, but this year there has been an unusually large number of such sequellæ, which is no doubt due to the prevalence of la grippe at the same time, the grippe germ gaining entrance or thriving by reason of the lowered state of vitality brought by the exanthema. Whether this is the correct explanation or not, specialists and general practitioners alike will admit the correctness of the statement that there have been an

unusually large number of patients afflicted with middle-ear inflammation of a severe type during the months mentioned.

Given a number of such cases, we will find, according to their severity, a certain number accompanied by inflammation of the mastoid process, or lateral sinus infection or abscess of the brain, and it is by no means necessary that these conditions shall be preceded by a suppurative inflammation of the drum cavity, as many physicians seem to believe.

It has been my fortune, or rather misfortune, to see two cases lately of abscess of the brain possessing special interest. The first case, where diagnosis was unconfirmed, was so similar to the second, which was confirmed, that on hearing a short history of the two I think you will agree to its correctness. A girl aged 5, two weeks ago was attacked with "catarrhal fever," the diagnosis of the attending physician, which meant that she had a catarrhal inflammation of the mucous passages, this including the nose, throat, and bronchial tubes. A week ago she complained of severe earache in the left ear. This continued intermittently until three days ago, when it was noted that her speech was affected. This was soon followed by paresis of the right side of the face, the right arm, and then the right leg. The mind in the meantime became blunted, with loss of speech, complete paralysis of the right side, and coma. Her temperature had been 102 to 103 all the time. The pulse, at first low, was gradually getting faster and weaker. I made a diagnosis of abscess of the brain resulting from an inflammation of the middle ear. I refused to operate on the child, first, as it was too low to hope for recovery; and, second, on account of bad surroundings. It died in twelve hours.

The second case gave the following history: S. W., boy, age 11. Ten month previous was caught under a heavy barn door, the door falling on his head and rendering him unconscious for three or four hours. He soon recovered from this, and apparently the only after-effect was a fatal deafness in the left ear. There was no apparent fracture of the skull. I had no opportunity to examine his ear three month after the accident. There was no injury to

the external ear. He was attending school until a week ago, when he came home complaining of headache and severe pain in his left ear. This pain continued with more or less severity up to three days ago, with some fever. It was then noticed that his speech was affected, indistinct, and soon his mind became blunted, followed with paresis of the right side of the face, and right leg. In forty-eight hours he sank into a coma with complete paralysis of the right side and loss of speech, in which condition I found him. His pulse was 60, temperature 102°, respiration slow but regular with some sighing. Diagnosis: abscess of the brain. The father was a very intelligent gentleman, and could see himself that the only hope for the child was an operation, and wanted that done provided it offered any hope of recovery.

Dr. Bayard Holmes says in his late work that all abscesses of the brain secondary to middle-ear inflammation, exclusive of those involving the lateral sinus, lie within a radius of one inch from a point three-quarters of an inch perpendicular to the external auditory meatus. The question in this case was to decide whether to act on this observation or to operate according to the indications of the localized symptoms. I reasoned that it was possible the former injury has produced a lesion, and that this had become infected by the grippe germ gaining entrance through the inflammation of the middle ear. My hope was, and so expressed to the child's father, that the above was the case, and that there was not also a localized meningitis. I felt confident there was no abscess, but was also fearful of the latter condition. Assisted by Dr. C. O. Harper of Fort Worth and Dr. ———— of Bellevue, I operated at 2 a. m., there being no time to be lost. The head was shaven, and then marking made to localize speech. I used a chisel and then enlarged the opening with bone forceps to one by one and a half inches. The dura bulged, but did not pulsate. I then took a hypodermic needle and introduced in several directions. At the third puncture, the syringe filled one-third full of pus. Over this point I incised the dura, when the pus and brain detritus welled up into the cut. This I cleansed out, the cavity not being very

large. I introduced the needle in various directions, but found no more pus. The wound was closed, drainage introduced and the boy put to bed in a better condition than at the beginning. He improved for several hours, his pulse getting better and stronger, the stupor lessened and all looked favorable, but, alas, the fear of a meningitis proved all too true. After several hours his respiration was observed to be getting irregular and slow; this gradually increased until all effort at breathing ceased. We kept up artificial respiration for an hour and a half, but death triumphed.

It is a reasonable conclusion in this case that there was in addition to the abscess a basilar meningitis which extended until it involved the center of respiration. This was the direct cause of death, and not the abscess; possibly the same condition may have been present in the first case. I think it can not be disputed that in both cases we had a middle-ear inflammation, and that the la grippe germs gained entrance to the brain through the emissary veins.

The frequency of mastoiditis and sinus infections is probably due to the prevalence of grippe and the virulency of its germs. There is no doubt in my mind that there are a great many more cases of abscess of the brain than we think of, partly because of the difficulty of making a dignosis when it is situated in parts of the brain whose function is unknown.

REPORT OF A CASE OF DIVERGENT STRABISMUS, AND ITS CORRECTION.

HENRY C. HADEN, M. D., GALVESTON.

Miss P. W., age 26, Galveston, Texas, a trained nurse, came to consult me September 13, 1901, presenting the following history: When four or five months of age her parents noticed that one of her eyes turned outward. Since the age of five years she has had frontal headaches, most commonly over the left eye. For the past five years she has had severe sick headaches, occurring often and excited by fatigue and use of the eyes for near work. For two months these headaches have been continuous. She is very nervous.

Some five years ago glasses were first ordered; since then she has worn glasses constantly. The left external rectus was cut one month before the first glasses were ordered and a tenotomy of the right external rectus was performed three months after. The left external rectus was again divided four months later. Two and a half years ago the right external rectus was again cut, at which time the present glasses were ordered. One year ago prisms $2\frac{1}{2}°$ bases in each eye were ordered to be used while reading. At no time has she had diplopia.

When first seen by me she was wearing the following glasses:

O. D.+2.00 Sph. V=6/9.

O. S.+2.50 Sph. V=6/30.

The near point of each eye was 13 c.m. There was concomitant divergent strabismus. The patient preferred to fix with the right eye. The angle of squint measured on the perimeter was 24°, both for 30 c. m. and distance. The angle Gamma of the right eye was 4°; that of the left eye 3°. The rotations of the right eye were to the temporal side 45°, to the nasal 45°, upward 45°, down

58°; the left eye to the temporal side 25°, nasal 48°, upward 25°, and down 60°.

At first with a prism placed vertically before one eye in the usual manner, it was not possible to produce diplopia. After some trials I was finally able to make her recognize the images by placing a prism of 8° base up together with a red glass before the right eye and a prism of 15° base in before the left eye. The diplopia produced was homonymous. Later diplopia could be developed with the vertically placed prism alone. The ophthalmoscopic examination showed no fundus lesion. Her refractive error was measured under the influence of hematropine and was found to be:

O. D.+3.50 Sph. V=5/9.

O. S.+1.75 Sph.⊂+1.25 cyl. axis 90°=5/15.

This was ordered less 0.75 D. for constant use.

For certain reasons she was not seen again by me for one month. When she returned her condition was practically the same as when seen last. Homonymous diplopia being more readily developed by vertically placed prisms. Training with the prisms and the stereoscope was commenced. At first the eyes responded to the tests as though there was convergence of the visual lines, instead of divergence. For example: if diplopia was produced by a prism placed vertically before one eye, it would be homonymous, and if a prism of 15° was placed base out before the squinting eye, the false image would be projected, according to the patient's statement, toward the real image. The same improper projection was shown in using the stereoscope and with the Maddox rod.

For some days I had her come to the office daily, and I would produce diplobia; then with different combinations of prisms and by rapidly covering and uncovering one eye attempted to get her to properly interpret the visual impressions. After a few days she was allowed to use the stereoscope, looking at some of the simpler pictures; i. e., a dot and a circle. A little later some of the Kroll pictures were used. The stereoscope was one in which the lenses and prisms could be changed at will, and the distance between the objects and the interpupillary distance could be altered.

I shall not enter into the details of the training here. At the end of three months she had acquired correct projection and had learned to recognize crossed diplopia. For a part of this time she was made to wear a shield over the right eye (fixing), and use the left for reading a few minutes each day. The vision of the right eye now equaled 5/6 and the left 5/12.

During the next few months her work permitted of her being seen only occasionally. The squint angle remained the same, 24°. On November 3, 1902, I freely divided the external rectus tendon of the left eye. There was some difficulty encountered in separating it from its attachment on account of the cicatricial tissue present, resulting from the previous operations. Immediately after cutting the tendon there was homonymous diplopia, and with the Maddox rod test esophoria of 3° at four meters. Six days later the angle of divergent squint measured 12° on the perimeter.

On November 10, 1902, the internal rectus of the left eye was advanced 1½ m.m. November 20th, the angle of divergence =7°. (The sum of the angles Gamma=7°.) Under cover of a red glass there was homonymous diplopia of 6°, at five meters, and with a vertically placed prism there was shown to be exophoria of 12° at 30 c.m. When fixing for distance the eyes were *in under cover;* for near they were *out under cover.* For cosmetic purposes the results of the operation were satisfactory, for the eyes were apparently straight.

That she had proper projection for distance could be demonstrated by placing a prism of 8° base out before one eye; this produced crossed diplopia, *but the two images were rapidly fused.* There was no power of convergence. A new form of exercise was now commenced; one eye being covered, a small object placed in the middle line was fixed by the other and carried toward the nose, this caused the fixing eye to turn sharply in. The other eye was then covered and the same movement performed. After this was continued for some few movements, both eyes were rapidly uncovered, when she made an attempt to fix the object with the two. After a number of trials, the two eyes were made to turn in together,

in other words to converge. Apparently the rays from the object, when in one certain position of its field of motion, fell upon the two maculæ simultaneously. Each eye had been previously taught that when its macula was stimulated by the rays from the object, while it was being moved towards the nose, that it must turn inward, and so when each received this impression at the same moment they turned in together.

I do not mean that the patient developed instantly stereoscopic vision, but what is more probable is that the inward movement of each eye was an independent action not compelled by the desire for binocular single vision, but was the result of reflex innervation in the nuclei of the third nerve and not dependent upon the higher fusion centers. Acting upon this, I continued the exercise, causing the eyes to turn in together for some minutes, and then permitted the patient to look at pictures in the stereoscope with prisms and lenses placed as for one with normal binocular vision. She was able to fuse the pictures. Exercise was continued for some days, daily, with the stereoscope and also convergence exercises with prisms placed bases out before the eyes. In three days she developed a prism adduction of 30°, the eyes converging to within 7 c.m. of the nose. At distance there was esophoria 6°, and in acc. exophoria 2°. The condition remained about the same for one month, prism adduction reaching 45°, there being but occasional diplopia. She then attempted to nurse a very sick person and was compelled to lose her night's rest. Having a nervous disposition, and not having a strong constitution, she became very much exhausted and the diplopia, which had been only occasional, became frequent and annoying. The diplopia was still homonymous. After two weeks' rest the diplopia almost entirely disappeared, being very infrequent.

At times during the past year she has suffered from annoying periods of diplopia. These attacks were always brought on by the exhaustion resulting from hard work and nervous strain while nursing. The diplopia was relieved by wearing, temporarily 2½° prism bases out before each eye, in front, attached to her glasses.

For the past few months she has had but little diplopia. She is practically free from headaches, the disagreeable staring expression is lost, and she can use her eyes without discomfort. The muscle balance remains the same. Esophoria of 6° for distance and orthophoria in accommodation.

The cure of strabismus does not lie in simply so adjusting the eyes by operative measures that the visual lines are apparently parallel. Unless one obtains binocular single vision as a result of their efforts, they have no right to count their treatment a success, and to say that a patient is cured of the abnormal condition. Some years ago it was well enough to be satisfied with the cosmetic effects obtained; but today, in view of our knowledge of what patient, painstaking work will accomplish, we have no right to cut or tie an eye into correct position and let the patient go until we have exhausted all measures to restore the physiologic equilibrium of the eyes. In the treatment of concomitant strabismus, there are certain conditions to be attended to before and after operating:

1. Existing errors of refraction should be carefully corrected and the glasses worn for some weeks or months before a straightening operation is performed.

2. If the squinting eye is amblyopic it should be trained to see by covering the fixing eye and making the patient use only the amblyopic one for a while each day.

3. Diplopia must be developed.

4. Incorrect, or uneducated, projection should be corrected before operating.

5. If the strabismus is convergent the accommodation may be kept relaxed under the influence of atropine for some weeks.

6. After operating the eyes should be taught to converge properly.

7. Stereoscope exercise should be carried on for some time after operating.

That there is present in many cases of squint a new macula or acquired fixation area in the retina is to my mind unquestionable. I observed this condition some years ago in certain squint cases,

and believed it to be a considerable obstacle in the way to success after operations. If, for example, a child has convergent strabismus and there is vision in the squinting eye, let the fixing eye be covered, and, while the amblyopic eye still turns in, measure the direct vision, then make the eye rotate out until it occupies its primary position, and again measure the vision. There will be found a difference in acuity in favor of the squinting position. The effect upon the ultimate result of a straightening operation may be conceived if the following test be applied after the eyes have been made straight:

Have the patient read letters upon a test card, both eyes being open; then cover the original fixing eye and the amblyopic eye will be found to turn in, in order to fix to the position it occupied before the operation. If the patient is made to hold the eye still in its correct position and read and then allow it to turn in, again there will be found a difference in its visual acuity in the two positions, the difference being in favor of the squinting position. So it is obvious that, unless the patient learns to see better when rays fall upon the correct retinal position for the macula than when upon the artificial position, there will always be a desire to turn the eye in. There must necessarily be great difficulty in training the eye to see in its proper position, for when the better seeing eye is covered during the monocular exercises there is the tendency for the amblyopic eye to turn in (or out) to receive the stimulation upon the most active part of the retina. Therefore, it is necessary that the exercise should be conducted at first by the surgeon himself, he being careful to keep the eye in the desired position.

Incorrect, or uneducated, projection occurs, as in the case reported here, and its recognition and correction is necessary in the treatment of squint.

DISCUSSION.

DR. R. F. MILLER, Sherman: Dr. Haden's report showed a very interesting case very scientifically studied and handled. Many divergent cases are hard to manage, and results are often disappointing to both the sur-

geon and patient. A simple convergent case is often relieved satisfactorily by a tenotomy, but some of the complex convergent cases and divergent cases are a hard task. The alternating cases require much skill. To the patient the cosmetic effect is usually the most interesting factor.

DR. W. A. RAPE, Victoria: I have had no chance to prepare for a discussion of the very able paper, as I received the program only a few days before leaving home for this meeting, but like to state that a case of convergent squint in a young man, aged 22 years, came to my notice some two years since, which I report from memory. In this case the convergence was very great, due to some four or five dioptres. Hyperopic in early childhood, for want of retinal development, the vision of the squinting eye, at the time I examined the case, was, I believe, 10-100. But by reason of an accident to the better eye, in which a foreign body penetrated the eye through the cornea and iris and inflicted laceration of the lens capsule, early traumatic cataract resulted. This, of course, necessitated the use of the amblyopic squinting eye, resulting in improvement of the diplopia vision within five weeks from the time the injury was sustained from 10-100 to about 10-15. So, even in adults, it seems possible by educating and stimulating the retina that vision may be improved. This case left my town after a few weeks and later died of pneumonia, so it was impossible for me to keep the case under observation, but I understood that while the absorption of the cataract progressed favorable without meddling, still the vision continued good in the squinting eye.

DR. J. A. MULLEN, Houston: One should refract all cases of squint, whether convergent or divergent, before cutting the muscle. Vicious results will often follow if this rule be broken. Divergent squint, extreme in degree, is difficult to handle. A very myopic lady had marked divergent squint. Three shortening operations were without result. The external rectus was resected from the sclera and cut off as far back toward the point of origin as possible, and the internal rectus shortened.

SUBCUTANEOUS INJECTION OF VASELIN FOR THE CORRECTION OF DEFORMITY.

H. L. HILGARTNER, M. D., AUSTIN.

During a visit to Vienna last summer, I had opportunity of seeing paraffin and vaselin used in the correction of deformity. As the use of the latter is so much simpler, and the results seem to be equally as good, my opinion is that vaselin will come to be used exclusively for the correction of deformities. We all know that the preparation of paraffin for such lines of work is very tedious and complicated, while vaselin needs only to be thoroughly sterilized and may be used at the ordinary temperature.

Up to the present time we have comparatively few reports of the use of vaselin as a substitute for paraffin, and the future must determine whether all the claims made for this simple remedy can be sustained.

In my opinion I can serve this section best by presenting the subject in the least possible time, trusting to the discussion which will follow to bring out details as to preparation, technique, and comparative advantages and disadvantages of the use of paraffin.

In January, Miss ——— consulted me in regard to a deformity of lower lid of right eye, caused by having worn too large an artificial eye. The lid drooped from the constant tension which it had been under, causing a deep sulcus about one-eighth of an inch below the lid border. As the patient was opposed to any cutting operation, and yet was anxious to have something done to bring about an improvement in her appearance, I decided to inject vaselin, with the hope that it would fill out the furrow and possibly have some effect on the tension of the lid.

The vaselin was sterilized, allowed to cool, and then drawn into an ordinary hypodermic syringe, the needle carefully introduced

under the skin and the vaselin injected slowly, shaping its substance at the same time. When a sufficient quantity had been introduced, the syringe was withdrawn and the patient allowed to go home without applying any dressing whatever. The patient was kept under observation for six weeks, with no apparent change, and a good result remained at the last examination. No reaction was noticeable at any time after the injection.

At the last examination the sulcus had entirely filled out, and the whole lid presented a very satisfactory appearance.

DISCUSSION.

DR. J. A. MULLIN, Houston: I have used paraffin in one case only. I amputated the anterior one-third of the eyeball, removed the vitreous, retina, and choroid, also resected the optic nerve. I then filled the empty sclera with paraffin. Great reaction followed. In my next case I shall use vaselin.

SOME CATARACT CASES.

R. F. MILLER, M. D., SHERMAN.

The many elements involved in cataract cases make them of unusual interest to oculists. The successful operation requires a nicety of skill and precision, and every care should be taken to prevent complications. Then, the fact that we are either restoring sight to the blind or proving their blindness hopeless, must make us all think well before we operate. Practice in these cases should follow the old trite saying and "make perfect," but, sad to relate, it is not true; and in some of the largest clinics in the Old World and the New we see eyes ruined often by the lack of skill of regular assistants to some of the world's most famed oculists. We recall vividly three cataract cases operated within an hour in our presence in the clinic of one of Vienna's greatest oculists, and each eye was hopelessly ruined by undoubtedly unskillful manipulation. In two cases there were detachments of the iris, and in the third there was a very large loss of vitreous from over pressure. The operator finally decided that it was Friday and he would attempt no more operations that day.

My object in this paper is to report three cases, each presenting some interesting feature.

Case No. 1.—E. M., male, 64 years of age, senile cataract in both eyes. Patient's general health fair, excepting repeated attacks of rheumatism. Operation with iredectomy was done on right. There were some iritic adhesions. Lens was expelled with difficulty, leaving some flakes of cortical substance. These required more than the usual amount of milking to expel; finally, a satisfactory pupil was obtained, and the eye was then dressed as usual. Healing was uninterrupted until eighth day, when discomfort and photophobia began. Pain grew worse on ninth day, and iritis was diagnosed. This was more violent the tenth day and continued

with marked severity for ten days, and the iris became very green. Patient's sight decreased till he had only a perception of light. Atropia and hot fomentations were kept up faithfully, alkalithia and potassium iodide. Three weeks after the operation the eye began to clear up, and patient recovered his sight graudally. The improvement lasted through about six months, and now he reads newspaper print readily with his reading correction +17.

My reason for reporting this case is because of the remarkably good vision left after severe post cataract iritis.

Case No. 2.—S. P., male, 32, pale, anemic, and generally bad physical condition. Had been in penitentiary five years; the last two spent in total blindness. Examination showed all marks of double senile cataract. There was a marked arcus senilis, and apparently the usual solid cataract. The usual operation was done with iridectomy. When the capsule was lacerated with the cystotome, the whole contents of the capsule gushed out of the wound and was of the consistency of the aqueous, excepting some little streaks of milky substance of egg albumen consistency. The eye was dressed as usual. The unexpected happened and the eye healed more rapidly and smoothly than any ever watched by me. Patient left hospital in a week, and was working in the field before three weeks with one of the best after-cataract visions I have ever seen. This was more than I had expected, as the premature age and softness of the cataract were very unpromising for good healing.

Case No. 3.—S. W., age 72, had double senile cataract. The first eye was operated in the office, as we then had no hospital and patient's house was so unclean. The only thing of note is that after the operation and dressing patient's wife undertook to drive him home. On the way the horse ran away, threw the patient out on his head, with much force, and bruised him in several parts of the body. Strange to relate, there seemed to be no injury to the eye, and he made an uninterrupted recovery with 20/40 vision.

DISCUSSION.

DR. J. A. MULLEN, Houston: Seven years ago I operated on a man 70

years of age. He returned home on the sixth day, and, after leaving the train, rode twelve miles on horseback in the teeth of the north wind. Three months later he returned for glasses, vision 20-25.

DR. R. F. MILLER, closing: In answer to Dr. Ferguson's question I may say that there was some manipulation to expel the cortical lens substance, but, as there were iritic adhesions and the patient distinctly rheumatic, I take the latter to explain the post-operative iritis and not the traumatism. As to office operations for cataract, I do not favor them, but this one was a necessity. After this patient was thrown from the buggy onto his head, it looks like cataract cases can often stand violent handling.

TREATMENT OF DEAFNESS WITH HIGH FREQUENCY CURRENT.

H. L. HILGARTNER AND J. W. M'LAUGHLIN, JR., AUSTIN.

In presenting for your consideration the high frequency current in treatment of ear diseases, I do so with a view of calling attention to a subject whose scope of application is, as yet, little known. I am well aware of the fact that this form of electricity has been used to some extent, but, thus far, nothing definite has been published as to the class of patients to whom benefit from its use is to be expected. My first experience with this method of treatment raised my expectations to the extent that I hoped we had finally a measure which would promise us more favorable prospects in the treatment of chronic middle-ear catarrh; but, since I have made more thorough investigation, those hopes have been decidedly lowered, and I am forced to the conclusion that only a limited class of cases can be benefited by this form of electricity.

Dr. J. W. McLaughlin, Jr., of Austin reported to me two cases which has been in the hands of competent specialists, with no benefit whatever, after months of treatment with inflation, bougieing, massage, etc., and in which improvement promptly followed the use of the high frequency current, and today the hearing has increased from a loud voice close to the ear to hearing ordinary conversation at three feet. Soon after learning of these cases of Dr. McLaughlin's, a patient consulted me whose hearing had steadily grown worse for the past two years, and, at the time I made the examination, it was difficult to make the patient hear even a very loud voice close to the ear. The case had been in the hands of very competent men, with no improvement whatever; on the contrary, the hearing had grown gradually worse. From the history of the case, my opinion was that it was utterly hopeless. As a last effort, I suggested that we try the high frequency cur-

rent, and, to my surprise, found a perceptible improvement from the tenth application, and today the case has been under treatment two months, with five-minute exposures twice a day. The result has been that today the patient hears ordinary conversation at one foot from the ear; can use the telephone fairly satisfactorily.

On the other hand, I have had several cases under treatment which have shown no improvement whatever. Dr. McLaughlin reports four cases in which there was improvement, seven with no improvement; one of the seven decidedly worse. Dr. Steiner's observation was negative in all cases that came directly under his care. Out of six of my own cases, improvement was noticed only in one.

As will be noticed from the above, the results obtained from the high frequency current are not very encouraging. I realize that the number of cases here reported does not justify one in forming a definite conclusion. I am satisfied that this form of treatment can be applied with benefit in some cases. Before closing this paper, I will add an extract from a paper by Dr. Frederick F. Strong which appeared in the April number of the Illustrated Review of Physiologic Therapeutics:

"Cases that have been under treatment for various diseases in the past demonstrate that the effects are permanent. The most obvious way of demonstrating the wonderful increase in tissue combustion produced by the high frequency current is in cases of gout, where the urine is loaded with urates. Chemical analysis made before and after the use of the high frequency currents shows a marvelous difference; the urea increasing while the uric acid disappears. For this reason these currents are effective in any condition of the system where the vital forces are depleted. The high frequency currents produce definite therapeutic results, which are not due to suggestion, and which can be demonstrated over and over again.

"These effects can not be produced by any other force with which we are familiar at the present time. From the standpoint of the work in which this Association is particularly interested, I could

think of a number of important uses for high frequency currents. In the first place, a high frequency current energizes the body of persons anywhere within a radius of eight or ten feet of the apparatus. The first apparatus of this sort was made for the purpose of producing X-rays, and I was led to investigate the wonderful gain in vitality which certain patients manifested who were being exposed to the action of the X-ray for diagnostic purposes in the process of taking a skiagraph. This led to an exhaustive series of researches along this line, covering a period of nearly eight years. Some of the results have been most startling. The relief of pain in some cases was almost immediate, and I was inclined to believe it was due to suggestion, but a number of experiments eliminated this factor to a great degree."

DISCUSSION.

DR. J. A. MULLEN, Houston: One should make a correct diagnosis before treating any case. I notice an Italian authority reports finding post-mortem eburnation of the petrous; hence the indifferent results obtained from treatment. I believe the electrical treatment is only temporary in its benefit, simply stimulating the auditory nerve.

TUBERCULOSIS OF THE LARYNX, WITH REPORT OF CASES.

E. H. CARY, M. D., DALLAS.

Since Demme, in 1883, reported a case of a boy, age 4½ years, who died of tuberculous meningitis, the necropsy showing the presence of laryngeal ulceration with tubercle bacilli, the thoracic and abdominal organs being, at the same time, free from tubercular disease, no one has doubted that primary tuberculosis of the larynx occurs. In the life of the average practitioner, however, it is hardly probable that he will report a single case, yet we are constantly requested to determine, for the general practitioner, whether a case, where there is a well marked tuberculous diathesis, is or is not tubercular. This opinion is sought for guidance in determining whether the indefinite physical signs should justify one in making the diagnosis, thereby changing, at this period of doubt, the future domicile of the patient.

We all agree that the catarrhal state, which we find in just such cases, offers less resistance to the propagation of the tubercle bacilli, but how far a man should go in his statements, since it is of serious moment to the individuals involved, is a question of very great importance to all the men who are constantly besieged for positive expressions. Most of you are familiar with the statistics collected by Fletcher Ingals, who claims that nasal catarrh, with obstruction, instead of predisposing the individual to tuberculosis really protects from pulmonary disease. This is contrary to the popular view and a great many excellent observers, who go so far as to advocate the removal of any obstruction to a clear nasal passage, believing the increased air supply through the normal channels is a great protector from and a curative agent in pulmonary tuberculosis. It has often been very hard for me to decide when a partial obstruction was of sufficient moment to justify its

removal. The bearing it may have upon the catarrhal conditions in the throat is very plain in some cases. In others, when the normal condition of general health is established, what may have appeared of sufficient interest to cause alarm may now, under improved general health, appear absolutely harmless. The local conditions when abnormal, especially in a case of tubercular tendency, are of especial value in forming an opinion. The family doctor should be made conversant with the many reasons for the catarrhal state, and should be asked to co-operate in every effort possible in restoring a normal condition.

It is said that in all cases of tuberculosis, the larynx is in some degree involved in nearly half, but we know that a large number of these cases can not be called active. The proportion of males to females attacked by the disease is represented in the proportion of three to two. The maximum frequency is in individuals from 21 to 30 years old, the minimum in those under 1 year.

Pathology.—Virchow recommends the larynx as the most appropriate place for the study of true tubercle. For the pathology in detail, I should recommend Lennox Browne, who describes it most beautifully. He divides it, first, into the simple, local, inflammatory process due to indirect and distant influences, distinguishing it from changes due to the active presence of the tubercle bacilli. The inflammation and edema consist chiefly of the dilatation of the small blood-vessels and lymphatic channels, together with a tendency to multiplication and vacuolation of the leucocytes, lymphocytes and wandering connective tissue cells, with distension of the intercellular spaces, which accounts for the marked edema often seen in the early stages. Experience teaches that either condition from slight edema in increased vascularity to well marked small cell infiltration may frequently, but does not necessarily precede the deposit of tubercle. Secondly, the tuberculous changes show a marked tendency to select at first this region, in which lymphoid tissue is most abundant, consequently the ventricular bands are generally the seat of actual nodular deposit, although other regions laryngoscopically appear to be much more

severely attacked. The nodules are at first discrete, but later may fuse, appearing as large tubercles, found at first in subepithelial and submucous tissues, whence they spread by infiltration both superficially and deeply. Tubercular changes, as a rule, spread with the lymph path, but may also occur throughout the blood vascular system. The acino-tubular gland tissue is peculiarly prone to tuberculous deposit, accounting for the early and frequent involvement of the interarytenoid fold and epiglotis, where these glands are plentiful; later all parts of the larynx may be involved.

Diagnosis.—When the point of primary infection in the respiratory tract, other than the larynx, has not been discovered, it becomes a very difficult problem to determine what the changes may be, as primary tuberculosis of the larynx is of very rare occurrence. The tuberculous process is characterized, first, by anemia; second, by infiltration and tumefaction; third, ulceration; fourth, necrosis; fifth, new formations. Cohen says the earliest recognizable change in the acute stage is almost always manifested by marked congestion of the mucous membrane; of the chronic, by marked pallor. Infiltration and tumefaction is said to be the first invariable characteristic. The general seat of earliest infection is the interarytenoid space, covering one or both arytenoid cartilages and aryteno-epiglotic folds; ulcerations characterized by their small size, multiple character, and their tendency to coalesce and to extend laterally rather than penetrate deeply. Many writers make the statement that not all of the ulcerations occurring in the larynx of tuberculous patients are tuberculous. Heinze gives the percentage of a total of forty-nine cases 83 per cent tuberculous and 17 per cent nontuberculous. Doubtless a great many of these heal under treatment and may be the basis of any claim a man may make. Necrosis and caries may attack any of the cartilages of the larynx, according to Lennox Browne, although Beverly Robinson of New York says instances are very rare. In most of the cases we find granulomata. In one of my cases the granulomata were so numerous that the interarytenoid space was so com-

pletely filled that phonation was not only rendered practically impossible, but his breathing space was very much compromised.

The prognosis is an interesting point. In three years I have not yet had a case in which death occurred, although some have been out of my hands for a year or two, in climates more agreeable to themselves. The prognosis given by Bosworth is an average of eighteen months. Lennox Browne in all probability describes it very aptly when he states some die at an early time from this disease, while others may become chronic, and does not state the length of time they may live. The statement is made that with a given degree of pulmonary disease the rapidity of termination is greater in proportion to the amount of difficulty in swallowing. It has been hard for me to view the average New York clinician's statement that eighteen months will be the average life of a pulmonary case of tuberculous laryngitis, for these cases I have seen in Texas are all alive at this time, and, with one exception, seemingly very much improved as the years go by.

Case No. 1.—Motorman—brought to my clinic three years ago; much emaciated, night sweats, temperature 102° F., pulse quickened, great deal of cough and aphonia, some pain. Physical examination showed marked change in upper lobe of right lung; larynx showed broad ulcer over the interarytenoid space, induration of ventricular bands, vocal cords much involved, edema of the arytenoids. Resumed work, and I lost sight of him until last fall, when I was told that he had just found it necessary to give up his avocation, and was loosing ground very rapidly.

Case No. 2.—Traveling man—contracted pneumonia, with pleurisy in 1898; never fully recovered. Doctors advised him to change his location, so asked for transfer to this country; was advised to see me due to his aphonia in 1901. He gave a connected history of night sweats, etc., with periods of improvement, but believed his trouble not to be tuberculosis; for he had been told three years before, and, as the prognosis had not been accurate, he had long since ceased to believe in the diagnosis, and now thought to become well it was only necessary to have a throat man give

back to him his voice. Physical examination showed upper lobe of left lung badly damaged, with pleuretic adhesions, etc. Throat examination showed granulomata very numerous and extending far out into the commissure; one vocal cord entirely ulcerated through, ventricular bands much indurated, numerous miliary tubercles, cough quite distressing, not much pain, weight 147; no marked general symptoms. Treated him awhile, and had him under surveillance for six months. He went to Southwest Texas, then to Colorado, and back to Southwest Texas. Saw him two years later, and he gave an interesting history of getting better and worse until he gradually changed in Southwest Texas climate for the better. Now weighed 160, regained much of his voice, and was sure he was now well. An examination developed the fact that his voice was the result of the approximation of indurated valse vocal cords, granulomata not so large and numerous; vocal cords entirely destroyed on one side, nearly so on the other, and marked induration throughout mucous membrane and tissue of the larynx, with many miliary tubercles. Patient was crestfallen when told his condition, and asked to protect the rest of mankind by proper sanitary measures, a thing none of these walking "destroyers of the innocent" seem to give a moment's thought.

Case No. 3.—Young married woman gave history, when carefully sought, of having had serious illness, night sweats, etc., eight years ago; past year had been treated by a specialist in an adjoining town for aphonia, believed to have been the result of catarrh. Had a circumscribed area in right upper lobe, distinctly seen with X-ray; physical signs positive. Larynx showed an ulcer in the interarytenoid space, with an ulcer with mouse-eaten edge 12 m.m. broad, the ventricular band on left side being markedly indurated, overlapping vocal cord of this side; vocal cords seemed to be much damaged. In this case the edema was very marked over both arytenoid cartilages, and mucous membrane, not only of larynx, but of upper throat, anemia being very profound throughout. This case was treated by direct, local application of equal

parts of almond oil and guiacol at first every day, later every second or third day. Along with this she was encouraged to eat, given creosote, and everything done to help her general condition. She was treated throughout the winter, improving all the time; discharged six weeks ago, with a tentative statement of cure; was seen a few days ago, and pronounced entirely well. The arytenoid was normal, ulcer healed, induration of ventricular band normal, voice, which improved rapidly from first, now perfectly normal. If this case had not been so typical in its aspect, I should very much doubt it being more than an ulceration, which could have been explained on some other basis. The sputum was examined with negative results, by no means excluding the diagnosis. The infected lung area, being now so beautifully circumscribed, must have infected the larynx years ago, and this tubercle remained in its place many years before lack of local resistance made it possible to break down. The gradual involvement of the surrounding tissue had become serious when I saw it, but, with treatment directed to the parts, it was entirely controlled without the lung becoming again involved.

Case No. 4.—Man under observation at the present time; no physical signs suggesting phthisis; throat had been treated for the past three months by a contemporary; has been hoarse for the past ten days. Examination shows marked indurated area, with small tubercle plainly seen to the left of interarytenoid space; mucous membrane much thickened and angry looking throughout the larynx; slight ulceration on both vocal cords; small tubercle on right ventricular band. This man has been under observation only two days. The first day I felt pretty sure it was syphilitic, remembering the rarity of primary tuberculous laryngitis, the absence of anemia, peculiar situation of indurated mass, and total absence of pain, except on pressure over the spot, the absence of tubercle bacilli, careful examination by three or four excellent observers, no temperature, and a history which could be utilized as a basis for reasoning it was syphilis. Today, with the improved condition of the mucous membrane, with the tubercles staring me in the

face, which may yet prove gummata, I have had to put my diagnosis on the fence; yet, I have ordered a vigorous antisyphilitic crusade, and, in the next few days, hope to make a positive diagnosis.

I am sure I have said enough to call forth a discussion as to the prognosis. I should be glad to find that in the hands of the men who have lived in this western country many years that, after all, the prognosis as to duration of life can be extended beyond that accepted by eastern observers. We should accept it as a duty to paint the picture as pleasant for the patient as possible, at the same time condemning unsanitary habits; convincing them that, although up and apparently strong, they should guard the lives of others by careful well-known measures.

SECTION ON DERMATOLOGY.

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   W. F. West, M. D., Waxahachie.
2. Sexual Neurasthenia Resulting From Posterior Urethritis.
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VENEREAL DISEASES AND PREVENTIVE MEDICINE.

W. F. WEST, M. D., WAXAHACHIE.

There has been considerable activity, among medical workers, from the early history of medicine, in the field of preventive, as well as curative, medicine. But the last decade and perhaps the latter half of that has witnessed greater interest, more persistent and intelligent effort with better results than any previous period of far greater length. Long ago Jenner demonstrated the effectiveness of vaccination in the prevention of smallpox; and the fact, established by him, has gained strength all along, till recently, by a long stride, it is firmly fixed in our belief that by compulsatory vaccination of the entire population smallpox may be swept from the globe.

The former students of malaria demonstrated to their satisfaction, and their theory was accepted by the masses of the profession, that the poison depended on three factors for its development,—altitude, moisture and temperature; that after generation it was air-borne and water-borne. Hygienists told us that the drainage of swamps, clearing up of underbrush and weeds and letting the sun in would go far toward stopping the formation of the germs. The growing of eucalyptus trees, which were said to have been a special affinity for the poison, was recommended. In fact, any kind of trees, growing between the source of infection and the habitations, were said to gather the poison on the leaves and bark as the air passed through them, thereby affording some protection. We were warned not to eat unpared raw fruits, for fear of getting a dose of malaria; to have sleeping apartments in the second story, because malarial poison was carried on the air near the ground; to take a cup of coffee, a lunch and dose of quinin before going out in the morning during the malarial season.

Yellow fever was thought to be very closely akin to malaria; a

peculiar form of pernicious malaria, developed in lower altitudes and at a higher temperature, having an additional element of being transmitted by contact and fomites. But close and careful investigation by some competent and careful workers has thoroughly convinced some, and set the remainder to seriously thinking, that certain species of mosquitoes are to blame for a dissemination of the infection of both malaria and yellow fever.

The literature of these investigations and conclusions is very interesting and instructive, and to which I refer you for full appreciation of its extent, and its worth to humanity. There are other diseases, the manner of infection being well known, and means of prevention well understood, but, as yet, a prevention of the same and its importance has not appealed strongly enough to the profession. But the time is perhaps coming when measles, whooping cough, etc., will be given due attention (as their mortality indirectly is great) and become entities only as matters of history.

There is another class of diseases, contagious and infectious, to which our greatest investigators and clinicians have devoted much attention as to cause and cure, so that we are inclined to think we are about at the limit; however, the end is not yet. I refer to venereal diseases. A. Woldert, in American Journal of Medical Sciences, quoted in Practical Medicine Series, July, 1903, computes expense in money of malarial fevers in one year in Texas reaching the immense proportions of $5,333,320. The widespread and far-reaching effect of tuberculosis on the population of the world in loss of life, of many of the brightest and best citizens, at the period of their greatest usefulness and highest earning capacity, certainly entails a loss to Texas and the world hardly admitting of computation. Venereal diseases deserve a large share of our consideration, when we come to estimate suffering, loss of life and material wealth to our country and to the world. Think of the abortions due to syphilis; the long period of expensive treatment necessary to a cure, if ever reached. The hereditary taint entailed on an innocent offspring, the end of which can hardly be calculated. Syphilis is not only a factor of depopulation, but of degen-

eration of the race. It poisons the health and happiness of the household. It carries in its train not only physical woes, but social misery, often disunion and divorce. What husband can hope to retain the love and esteem of the wife whom he has dishonored with a shameful disease; of the mother in whose child he has implanted the foul taint of the prostitute, which dies before being born, or comes into the world an object of disgust and horror. If he be a man of conscience and sensibility, what remorse he must suffer from his sense of guilty responsibility for the misery he has wrought.

Gonorrhea, by occluding the seminal outlet, renders the man impotent to procreate his species. For the woman it renders her oviducts powerless to perform their functions by occlusion, by local inflammation, drawing them out of proper relation to the ovary, causing extra-uterine pregnancy, or pyosalpinx or pelvic abscess, necessitating the removal of part or all of her generative organs, or bringing about a state of chronic invalidism for life.

Dr. Price says, that in over a thousand sections for pelvic inflammation, 95 per cent were attributable to gonorrhea, and that in 95 per cent of these the history was reliable and clear. The universal testimony of pelvic surgeons is that gonorrhea is responsible for a large percentage of conditions requiring surgical interference with the female generative organs. Many laymen, and some physicians, regard gonorrhea as a disease of small moment; "had as soon have it as a bad cold."

Allow me to quote from Morrow, "Social Diseases and Marriage": "We are accustomed to look upon syphilis as the most active cause of depopulation, but gonorrhea is the much more powerful factor." He quotes Janet, in discussing "Social Defense Against the Venereal Peril," who recently (1902) declared, "that gonorrhea with tuberculosis, perhaps more than tuberculosis, is the great pest of the age." If we compare from a social point of view the importance of gonorrhea with that of syphilis, gonorrhea is to syphilis as 100 is to 1, not only from the standpoint of the number of persons attacked, but also from the standpoint of the gravity of the lesions and their perpetuity. Gonorrhea modifies in a manner,

often permanent, the genital organs of the patient, renders them infinitely dangerous to the woman they approach, causes all the metrites and adnexal inflammations, which today give to surgeons three-quarters of their work, and conduct finally both men and women to sterility." By their destruction of the normal procreative power of men and women, these two great plagues defeat, in part, the mandate of heaven, when He said, "Go forth, be fruitful, multiply and replenish the earth," and prevent the birth of enough children to people an entire world.

Look to our insane asylums, inquire how many are there as the result, directly or indirectly, of syphilis or gonorrhea. Our blind asylums are crowded with inmates who have been forbidden the pleasures of, the light of, the world, either from their own evil doing, or, as a rule, that of an offending parent.

In view of the facts enumerated, and much more with which you are familiar, does it not seem that venereal disease should be given a place of prominence on the list of preventive maladies? The great and most potent cause of the wide spread of these curses to humanity is prostitution. Whatever influences one also affects the other. Some effort, from time to time, has been made to stamp out prostitution, or limit it as much as possible. Religious and moral education, and the spasmodic enforcement of the law against the same, have been the means usually employed in this country. In some of the European cities, Paris, more notably, the plan of registration and strict medical and police inspection has been adopted; this, however, has not been entirely effective, and for one very good reason, at least, as the male offender was not included, and was allowed to still run at large, distributing the deadly germs. And again medical inspection does not always secure safety from infection, as the germs may be lurking there and yet no symptoms by which their presence can be detected. The female may be only a conveyor of the disease.

In this country there is a strong opposition to in any way legalize prostitution. Morrow, "Social Diseases and Marriage," pages 335-36, says: "It is difficult to draw the dividing line between toleration and authorization. In fact, it is not possible to regulate

by State control a status or trade, without license of that trade under specified conditions. It is but just to say that, while the system of reglementation has for its most essential features the registration and medical surveillance of all women engaged in prostitution who can be brought under its control, it endeavors to prevent the entrance of young women into this life by refusing the registration of minors, unless hopelessly irreclaimable, and providing reformatories and other means for the rescue and restoration to honorable life of fallen women who wish to reform. But, in 1872, a law drawn upon the lines of the continental system of regulation was enacted by the Missouri Legislature. It was in operation only the brief period of one year, when the law was swept from the statute books by an avalanche of protests, coming chiefly from the clergy and the women of the State. The incidents attending the repeal of the statute were quite spectacular. A petition praying for the repeal of the obnoxious law, signed by more than a hundred thousand good people was presented. The document was cumbersome. A wheelbarrow decorated with white ribbons and accompanied by a group of young girls attired in spotless white gowns was used, and on it the gigantic and emphatic protest against the licensing of vice was rolled up to the clerk's desk to be read. The counter-petitions, the most conspicuous signers of which were members of the medical profession, were overwhelmed. Doctors of divinity and doctors of medicine have always taken antagonistic views of sanitary regulation."

Some contend that by hygienizing prostitution, thus sterilizing certain sources of contagion, it seems to render debauch safe and is an invitation to revelry.

So we are pursuing a course of inaction. As a result we have presented, in this country, a remarkable condition of a large class of diseases, confessedly contagious, essentially inevitable, and yet absolutely ignored by our health authorities. Something should be done! What can be done? Legislative force can not suppress the evil. No police or sanitary net work is fine enough to serve as a drag net for all of the offenders. Such attempts make the female

offender more careful and shy, hiding in inaccessible places. If every female prostitute could be swept from existence, there would be enough male prostitutes left to readily stock a new plant, which would be forthcoming in obedience to the law of demand which creates the supply.

Society must cease to have a double standard of morality and virtue, one for man, another for woman. The libertine who frequents houses of prostitution, and seduces from the ranks of virtuous women victims to further swell the numbers of those already debauched, should not be allowed to mingle in the society of honest and virtuous women. Mothers and fathers should teach their daughters to exclude from their list of associates all men of known easy virtue. Such men should be completely ostracised from decent female society. The most essential cause of prostitution and consequent spread of venereal diseases is masculine unchastity. The prostitute is but the purveyor of the infection. She simply returns to her male partner the infection she has received from another. Ignorance of the nature of venereal diseases and of sexual hygiene contributes largely to their spread. The young should be taught by parents concerning such matters as are necessary for them to intelligently take care of themselves. Home instruction should be supplemented by departments of hygiene in our high schools and universities, and further carried out by committees from medical associations, distributing good, plain, healthful literature. Young men should be corrected of the false idea that sexual exercise is necessary to a healthy growth; and have implanted the fact that continency is not only compatible with but necessary to the development of the well-rounded man, such as is needed in every avenue of life.

The law should come to the rescue whenever it can be of practical assistance; such laws as will be supported by the masses of good people. The sale of patent medicines, and the prescribing by druggists for venereal diseases should be prohibited. A certificate of freedom from venereal taint should be necessary in order to obtain a marriage license.

SEXUAL NEURASTHENIA RESULTING FROM POSTERIOR URETHRITIS.

H. B. COMBS, M. D., BASTROP.

Neurasthenia is so general in America as to have been tritely called the American disease; however, I believe other races more susceptible, notably the Hebrews. In any event, heredity plays an important rôle, coupled with exciting and constitutional causes. It is not a disease per se, but a general manifestation of nervous debility or irritability caused by the exhaustion of nerve centers marked by sensational disturbances, unusual fatigue and a variety of psychical symptoms.

Neurasthenia in general may be caused by various chronic diseases, mental worry or emotions, overwork, loss of sleep, excitement, frequent pregnancies, sudden or severe shocks, physical injury, dysmenorrhea, the menopause, alcohol or drug habit, etc. That neurasthenia which I call your special attention to is of sexual origin, as from masturbation, sexual excess, and inflammation of the urethra and contiguous tissue.

The symptoms of sexual neurasthenia are those of neurasthenia from any other origin plus those referable to the sexual organs. They are all referable to a lack of nerve force; the physical and intellectual powers may still be good, but physical fatigue is constant, associated with a variety of other symptoms. *Motor* symptoms are tremors, twitchings, increased tendon reflexes, and rapid exhaustion following exercise of any kind. *Sensory* symptoms are headaches of various locations, occipital, frontal, vertical, or diffuse, a drawing sensation, or as if a band was around the head, or a weight on it, or a tenderness of the scalp. There may be vertigo, flashes of heat and cold, weakness of vision, and tired eyes, possibly even photophobia. There may be extreme sensitiveness of hearing. *Visceral* symptoms are an unusually rapid,

often irregular pulse, precordial pains and oppression, a protean variety of digestive disturbances, fitful appetite, usual constipation, urine either scant or high colored or pale and copious. The most prominent and troublesome symptoms are referred to the sexual organs, such as loss of virility, impotence, spermatorrhea, and a sense of exhaustion after coition. The *mental* symptoms are inability to concentrate the mind, forgetfulness, apparent loss of memory; but worse, a consciousness of this condition. The patient is depressed, peevish, irritable, despondent, moody, filled with vague fears and imaginings, as for example, that he is the victim of some terrible and incurable disease; in fact, a typical melancholia. He suffers from insomnia, especially the first part of the night; his sleep is not refreshing nor pleasant. Such a pitiable condition elicits the sympathy of every true physician.

Sexual neurasthenia due to urethral and prostatic trouble is a very common malady, on account of the prevalence of gonorrhea, and lax and vicious habits of young men. The very prolific causes, self-abuse, excessive venery, and gonorrhea have produced indeed a deplorable condition, which should demand and receive the best attention and talent. The physician who can look upon one of these unfortunate victims with scorn or even indifference, though he knows it is Nature's retribution for immoral or vile habits, deserves neither honor nor success. For in these cases he has a diseased mind as well as a body to treat. I have seen cases so dejected and despondent as to contemplate suicide. This depression rapidly disappeared when their confidence was gained and when assured they were curable and treatment instituted. There are many conditions which cause nervous prostration, but none so common among young men as posterior urethritis, which may result from or be accompanied by gonorrhea, prostatitis, seminal vesiculitis, stricture, tight meatus, urethral growths, excessive venery, masturbation, use of condoms, exposure of trauma, or such constitutional causes as urinary disturbances, rheumatic urethritis, food urethritis, and over-treatment. I believe in most cases the prostate is involved and the verumontanum inflamed, also

that there is seminal leakage, which to my mind may account for the great effect upon the mind and general nervous system.

Our attention may first be called to the cause of trouble by the patient desiring treatment for a sexual or urinary symptom. Upon examination we find the usual local symptoms of chronic urethritis, the "morning drop," or possibly a discharge of some kind from the urethra. He has an uneasy feeling or slight pain beneath the pubis, at the neck of the bladder, or possibly at the end of the penis or in the perineum. On introducing a sound, we locate a sensitive or painful area posterior to the cut-off muscle in the prostatic urethra; it may be we will find also a slight stricture. We may confirm the diagnosis by stripping the urethra with the finger in the rectum; this, however, is not usually necessary.

The treatment consists in first assuring him that he is not as ill as he thinks; that he can be relieved. One should win his confidence, then build up his system by tonics, regulate the bowels and kidneys, correct any disorder of digestion, and treat him locally. I usually order at first, dram doses of sodium phosphate, or sulphate, irrespective of the condition of the bowels, and glycerophosphates with strychnin and iron, and cold shower or sponge baths daily, for general treatment. Locally, I apply each week by instillation to the exact spot diseased a 5 to 20 per cent solution of protargol, using 5 to 20 M, being careful to let none of the solution run anterior to the cut-off muscle. I also instill every two or three days a 2 per cent solution of aristol and europhen oil (10 gr. aa ʒi), first passing a large-sized steel sound and letting it remain in the urethra ten minutes. If there is a free or excessive secretion I order atropine, if purulent, calcium sulphide, with bromides to put at rest the sexual nervous centers in elixir of saw palmetto and sandal wood. I have sometimes found irrigation of the deep urethra and bladder with a 2 or 3 per cent boric acid solution beneficial. If locally treated too often or too heroically, we aggravate instead of benefit the case. I rarely have to make more than six or seven protargol instillations, though sometimes have patient pass the steel sound weekly for two or three months.

It is very important that they control their sexual desires and abstain from alcohol and horseback and bicycle riding. My experience with Valentine's irrigation has been very unsatisfactory, usually prolonging the case, and I have had to finally stop it, and use instillation as above recommended. I have been recently using the aristol—europhene or iodoform in a firm base, pure vaselin, instead of an oil, introduced into urethra with a large uterine hard-rubber syringe, into which it is placed by withdrawing the piston. This dilates and fills the urethra and is retained longer than the oil, thus prolonging its action. I have with this dispensed with protargol instillation altogether, with satisfactory results. If the case is of long standing, the nervous system very much affected, the constitutional treatment will have to be continued for some time after all local hyperesthesia has disappeared. The nervous manifestations are the last to give away, often being very intractable, but with patience and persistence we eventually have complete restoration.

TINEA.

J. E. WILSON, M. D., BASTROP.

While in the State service as assistant physician at the North Texas Hospital for the Insane, I had twenty cases of tinea occur in my department. A ringworm on a cleanly, healthy person is at times very obstinate and occurring on insane patients it is extremely difficult to treat; because, as a rule, they are untidy, and you can not expect them to obey instructions in regard to treatment. They exchange hats, coats, etc., and will remove dressings and applications if not closely watched. They scratch the infected parts and remove the spores, thus readily transplanting them upon other individuals. In such large numbers it is almost impossible for each individual to have a separate towel, brush, comb, and bed linen. Even if this was done some would not use their own articles, because of some delusion regarding them. In the tidy and convalescent patients, the usual method of treatment can be pursued with the same degree of safety as in private patients. The ones with which I had the most trouble were the untidy ones, who would remove the applications, smear it in their eyes and mouth, and in fact all over their body. My attention was called to the existence of ringworm among the patients as I was passing down the hall. I noticed an old man, who was very feeble and almost blind, scratching his groins and buttocks very severely. I had the attendants strip him, and found that he had a typical attack of tinea trichophytina cruris, or as some call it eczema marginatum. There was extensive exudation and the itching was severe. The lesions were very large and irregular. They extended over the buttocks, the inside of both thighs, penis, testicles, and up above the pubis. A bath was ordered and the attendant told to scrub him thoroughly with soap and water to remove crusts and scabs. Prescribed the following: Chrysarobin, grains 40; acid

salicylic, grains 20; lanolin, ounce 1, to be applied night and morning. The old gentleman did nicely the first day, as the itching was allayed and the lesions looked better. The next morning I was dismayed to find a proctitis and conjunctivitis, so treatment of the ringworm was suspended and these diseases looked after. It required about one week to get these conditions under control, and it is useless to state no more chrysarobin was employed. While treating his eyes and rectum, another case similar to his was found. After this second case I began a thorough inspection of all patients under my charge, and as a result found eighteen cases in the 210 patients in this building. On the lower ward, among the fifty-six untidy and feeble patients, seven cases of eczema marginatum were found; on the second floor of the building, among seventy-seven patients, ten cases were found, six being eczema marginatum, four being tinea circinata, affecting the abdomen and back. On the third floor, with seventy-seven patients, five cases were found, four being tinea circinata, one of these also having tinea tonsurans, and one case of tinea versicolor. These patients all used the same dining hall, and while at meals the contagion was undoubtedly transmitted from one to another. At another building, the infirmary, with fifty-five patients, I found two cases: one eczema marginatum, the other was tinea circinata. One of these patients had been moved from the lower ward of the other building to the infirmary while suffering from an acute illness, and had undoubtedly infected his fellows. Having found from my first case that the dangers of chrysarobin were great in this class of patients, I had a large quantity of ointment prepared (sulphur and oil of cade, two drams to the ounce). The attendants were instructed to scrub parts with Johnson's etherial soap before applying. Among the cleanly patients, and especially where the body was the seat of the trouble, in fifteen days the majority healed readily. On the lower ward first mentioned, the cases of eczema marginatum did not do so well. The patients would soil themselves several times daily, and thus would enrich the soil for the fungus to feed on, as well as making a very

unsatisfactory patient to handle. I had a solution of bichloride of mercury (ten grains to the ounce) applied to infected parts night and morning with a camel's hair brush, only a small portion of the ringworm being treated at one time to avoid mercurial intoxication. After the application had dried, the parts were dusted with boric acid and bismuth in equal parts. In most of these cases inflammatory reaction set about the third day. Treatment was then stopped and an ointment of oxide of zinc, fifteen grains to the ounce, was applied to parts. As soon as reaction subsided, treatment was resumed. This method was pursued with four cases of ringworm of the body which had resisted the sulphur and oil of cade treatment, and at the end of eight weeks the lesions had disappeared. The case of tinea tonsurans did not do so well. He was covered from head to foot. The lesions on his head were about the size of a 25-cent piece, and in some places several coalesced and formed a patch as large as a dollar; his entire scalp was invaded. It was of a dry and squamous type. There was very little itching. His hair was clipped short, and we tried to epilate some of the largest patches. This was unsuccessful, as the patient had a delusion that he had an electric battery in his head and the hairs were the electric wires, and resisted treatment because we would ruin his battery if we pulled the wires out. He was given a room and always kept his hat there, and the room kept locked. The sulphur and oil of cade ointment was tried on both his head and body, his head being scrubbed thoroughly with brush and Johnson's etherial soap before the ointment and bandage was applied. The patches on his body began to disappear, but the scalp did not improve. So, after a two-weeks' trial, I abandoned the sulphur and oil of cade and tried the paste recommended by Kaposi: Naphthol, grains 15; green soap, drams ½; balsam peru, dram ½; sulphur, drams, 2; alcohol, ounces 2, on the scalp. Painted the lesions on the body with bichloride solution. The greater portion of the body healed, but the scalp was very obstinate. At the time of my leaving the service, the case was materially improved, but far from being cured. The case of tinea versi-

color readily yielded to a solution of sodium hyposulphite, one dram to the ounce. I regret that my observations did not include the whole institution of 1500 patients, but the twenty cases among the 266 patients shows what proportions this seemingly mild trouble will assume. I was not able to learn where the first case began, and, therefore, could not trace it from ward to ward.

In talking to one of my colleagues in regard to my subject, he stated a very interesting case to me. He had a case of ringworm on the face that had been very obstinate and had resisted quite a number of remedies. It became necessary for the patient to be chloroformed for some surgical procedure, and, during the administration of the anesthetic, the side of the face infected was burned by the chloroform. After the patient recovered from the surgical treatment the ringworm disappeared. He has tried chloroform since that time and applies it until it blisters, then uses a soothing ointment with good results.

Attention should be called to the seriousness of all forms of tinea, especially in school children. Care should be taken to see that they do not exchange hats and bonnets and do not use the same toilet articles. They should be made to sleep in separate beds. The parents should be made to realize the seriousness of the trouble, and see that instructions are carried out. They should thoroughly cleanse their hands after dressing the infected parts to keep from transmitting the fungus to others.

Physicians should also be careful in this respect, as the writer knows by personal experience. He contracted a ringworm in the axilla, and it proved quite troublesome, but finally yielded to bichloride.

SECTION ON SURGERY.

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CHAIRMAN'S ADDRESS.

THE EARLY ROUTINE EXTIRPATION OF ALL NEOPLASMS.

BACON SAUNDERS, M. D., FORT WORTH.

Until the etiology of tumors is more definitely settled, there must of necessity be considerable lack of unanimity in their treatment in accordance with the views of the surgeon as to their causation, morphology, clinical history, etc. There are so many things to modify the treatment under all the manifold circumstances of the growth and development of neoplasms that it is scarcely reasonable to hope that the time will ever come in the history of tumor surgery when a uniform and universally applicable rule of procedure can be laid down for all cases. While this must be recognized as almost a truism, it is, nevertheless, none the less desirable to formulate from time to time, as increased knowledge and experience seem to warrant, some generally accepted and practiced method of treatment that is as universally adaptable as possible. Modern surgical technique and increased opportunities for observing the end result after operative treatment in an ever-increasing number of cases have brought about a wonderful change in the last few years. This has brought within the field of operative cure neoplasms formerly thought to be out of the reach of the most heroic surgery. Unquestionably great as have been these strides of advancement both in method and results, is it not possible to make yet greater improvement, notwithstanding our lamentable ignorance of the real cause of the essential properties that tend to a fatal termination in a number of the different varieties of neoplasms? The gain hitherto made in the treatment of tumors from almost the very dawn of surgery has been due to two principal

factors: the technique that permits union without suppuration; and the general belief in the probable fact that in the beginning all tumors, innocent and malignant, are local in origin, and the consequent early excision of those known to be malignant. It is susceptible of easy demonstration that just in the proportion that the surgeon has recognized these factors and made them his rule of "faith and practice," so has the ratio of his success in treating tumors increased.

Owing to difficulties in differential diagnosis of benign and malignant growths, that all of our boasted methods of scientific precision have not yet enabled us to overcome, the perfect results that should follow treatment founded on the recognition of these two factors have not been obtained. In other words, it is but the statement of a common and well known truth to say that thousands of cases end fatally every year because the surgeon is not able to decide positively of their malignant nature until past the time for the successful application of even the most faultless and radical technique. Failure in such a case can not, in fairness, be chargeable either to the operator or his method, but rather to the rule that compels him to wait for signs of malignancy in the neoplasm before resorting to operation. There can be no safety in such a rule so long as the diagnosis between an innocent and a malignant growth can not be made absolute, and that, too, in the very beginning. That neither the science of surgery nor its allies, pathology and bacteriology, afford the means of such accurate and absolute diagnosis, the daily life of every surgeon shows only too plainly and sadly. None of us but what can recall numerous cases where the growth at first gave every indication both in situation, history, physical and even microscopical appearance of innocence, and was supposed to be harmful only by the "accident of its size and situation" that afterwards proved most malignant and fatal. So prone are all neoplasms to undergo malignant degeneration, or to furnish favorable conditions for the development of malignancy that it seems a safe, practical generalization might be formulated that no tumor, no matter what its apparent nature, is safe from

malignant changes until it is either removed from the body or the patient having it is dead. Great and even brilliant as have been the achievements of modern surgery,—and they are both great and brilliant,—it has given us no cure for any considerable number of malignant growths other or better than that handed down from the fathers: their early and complete removal. This proposition must be accepted as true and leaves no room for the discussion here of the possible cure of a very limited number of neoplasms by other agencies. This possibility does not in any way change the truth of the general proposition that the only known cure for malignant neoplasms is their early and entire removal by the knife, or their complete destruction by some other equally effective method.

It is not the purpose now to discuss any of these methods other than the knife, valuable and effective as they are sometimes under proper circumstances and with the right kind of restrictions thrown around their use. Much less is it necessary to mention in this presence the changes and degenerations that are observed to take place in tumors, the early behavior of which indicated characters the most benign. There is hardly a variety of benign tumor that has not been known to present at some period of its history characteristics that have made it a menace either to the life, usefulness, or happiness of its possessor. This aside, too, entirely from the question of malignancy. Malignancy is not by any means the only condition that takes place in the life of a neoplasm that makes it a danger and an ever-increasing burden and torture. Nowhere in the whole constantly broadening domain of surgery is there greater opportunity for the formulation of a truly democratic rule of procedure that will indeed guarantee "the greatest good to the greatest number." From this point of view it is believed it would be wise, and more in accord with surgical teaching and practice in other conditions, to remove early and completely (preferably and generally by excision) every neoplasm without *regard to its apparent nature.* The experience of every surgeon will suggest so many good reasons for the adoption of this practice and so few real

objections to it that it would seem that opposition to it is not to be looked for from that quarter. It is expected that those who cure tumors by "the laying on of hands," the exercise of faith, and other occult practices, will raise a great "hue and cry" against the adoption of such a rule. "Ephraim is joined to his idols! Let him alone!" Earnest, conscientious surgeons are too busy in their efforts to save human life and prevent suffering and disability to slap at every fanatical gnat that swarms in the atmosphere of scientific progress.

The rule for the early and complete removal of all neoplasms, regardless of their apparent nature, it justified in many cases by esthetic reasons. They all grow and increase in size, and the earlier they are removed the less the deformity caused by their presence, and the less disfiguration consequent upon their removal. The operation now is a mere bagatelle, both from the standpoint of possible danger and the possibility of scar or disfigurement, as compared with a later time. Many of them can be excised under the different kinds of local anesthesia, and their removal scarcely amounts to the dignity of an operation. All this without taking into consideration those conditions that may come about in any neoplasm that will make it an unpleasant and unwelcome guest from other than esthetic reasons, not to mention those that make a cure problematical or certainly impossible. The infinitesimal dangers from the occasional removal by this rule of a tumor that might never give serious trouble from its size, situation, or untoward metaplasia are not to be compared to those that may happen, and are happening every day, from waiting for some signs of danger before operation is undertaken.

It is indeed a question worthy of the most thoughtful and serious consideration whether it would not be advisable from every point of view, at least in the present state of our ability, to make an early and definite differential diagnosis between innocent and malignant growths, to suspect every tumor of malignancy and treat it accordingly rather than to presume on its innocence until malignancy is established. If this rule were rigidly applied to all

neoplasms occuring in those parts or organs of the body that are especially liable to malignant growths, it is difficult to see wherein the practice would not prove a wise and beneficial one. While it is believed that such a rule would be a perfectly safe one, and in the end a truly conservative one, it could not, of course, be made inflexible. It could not be safely applied in the case of probably benign tumors in situations where their removal would prove particularly hazardous either to life or some important bodily function. It is not contended for one moment that such a procedure should apply arbitrarily in all cases, but rather that it ought to be the governing principle for interpretation and execution in the hands of competent, experienced, practical surgeons. There are, however, some localities particularly prone to malignant disease and degeneration in which it seems the practice ought to be well-nigh imperative. If it were invariably applied to all new growths in the mammary gland, the testicle, the uterus, ovaries, and other pelvic contents, in the stomach, duodenum, and gall bladder, in fact to all tumors in the abdominal and pelvic cavities of whatever apparent nature, the real good that would be accomplished by the removal of malignant growths at the time of greatest promise from operation, and at the same time getting rid of benign ones that might in the future take on a malignant nature, or even already hold within them a focus of malignancy, can hardly be computed. This would also carry with it the operation on some cases supposed to be undoubtedly malignant and inoperable, but which at the time of operation would be found to be benign and safely operable.

The public is sadly in need of education along these lines, and at the same time it might be well for the profession to exercise a little more of the courage of its convictions in the treatment of tumors of every kind.

TUBERCULOSIS OF THE SHOULDER JOINT WITH RADICAL OPERATION FOR ITS REMOVAL.

W. L. ALLISON, M. D., SAN ANTONIO.
First Assistant Superintendent Southwestern Insane Asylum.

C. W., a German, has been in institutions for the insane about eighteen years, twelve years of which he has been a patient in the Southwestern Insane Asylum at San Antonio. Age 56, white and married; while in asylum has been working in kitchen. Uses tobacco, but otherwise habits are good. Family history not obtainable. No history of any previous disease, including syphilis and rheumatism. His arms, chest and back are covered with burns received by lying on radiators in the asylum. His mental trouble began as mania, but he has been demented for several years.

One day last May patient refused to go to his work in the kitchen, saying he had rheumatism in his left shoulder which manifested itself by sharp pains. Examination revealed no evidence of any local disease. However, patient remained in the ward and a few days later said he could not use his arm or fingers. Still no local disease could be found, and the normal electrical reactions were present. It was then thought the patient was feigning, especially so as there had been some trouble about his supply of tobacco at the beginning of his complaints. The condition remained about the same until June, when the left supra-clavicular fossa appeared a little fuller than the right. No other swelling or sign of inflammation was present. During the next two months the shoulder gradually enlarged, and after some persuasion he could be induced to move the fingers and forearm. Being sullen and morose he rarely complained of pain and would give no voluntary information about his case. He had no fever till the latter part of August, when his temperature would rise to 99 degrees F. in the evening.

September 25, 1903, the following conditions were present: He

could move the fingers and forearm and raise the arm slightly, but the movements of the shoulder were limited in all directions. The entire shoulder and upper part of the arm were swollen. The swelling being fairly symmetrical and making the shoulder appear twice the size of the other. The anterior wall of the axilla bulged some and gave the sense of fluctuation. Posteriorily over the scapula there was a similar but smaller bulging. In the anterior part of the axilla proper could be felt a firm, painless and easily movable mass about the size of a goose egg. The axillary glands were enlarged on both sides but more so on the left. The inguinal glands were also somewhat enlarged. The measurements were increased in all directions, the lengthening of the arm being 1 c.m. On aspirating the anterior bulging there was obtained a thin greenish yellow pus, microscopic examination of which showed it to be composed of a granular material containing a few leucocytes but no bacteria. The posterior bulging was aspirated, but no pus obtained. The heart and lungs showed no lesions. The patient showed very little emaciation. Repeated examinations failed to demonstrate any bacteria in the pus, so the next day one-half ounce of the pus was removed by aspiration, and forty minims injected, under proper precautions, into the peritoneal cavity of a guinea pig. Estimation of the Hb. at this time was 57 per cent. The temperature ranged from 99 degrees to 102 degrees F., with pulse ranging from 80 to 100 beats per minute.

In making a diagnosis of this case there were practically only three things to consider, viz.: syphilis, malignancy, and tuberculosis. There was no history of syphilis and no symptoms except the enlarged glands, but, as a test, potassium iodid had been given for some time with no improvement whatever. Nor was the nature of the pus that of a broken down gumma; and the patient having been in the institution for twelve years the idea was dismissed. As far as being a malignant tumor, we had little or no emaciation with a very large tumor mass. There was anemia but no cachexia. There had been but little apparent pain, and the swelling was not as symmetrical as that of a myeloid sarcoma in this situation.

Against the diagnosis of tuberculosis was the age of the patient and the fact that tuberculosis is more rarely found in the shoulder than in any other of the large joints. However, considering the irregularity of the swelling, the enlargement of the glands, and the nature of the pus, the diagnosis of tuberculosis was the most probable.

In the early part of October the guinea pig showed considerable enlargement of its lymphatic glands, especially the inguinal, while at the point of injection was an irregular hard mass. This confirmed the diagnosis.

Treatment.—There being so much infiltration of the tissues about the joint a simple excision of the joint was considered impracticable, while treating it through an open wound offered but little hope, so it was decided to explore the joint, remove all diseased tissues possible, and be further governed in the treatment by the results of the examination.

October 1st, under chloroform, a four inch vertical anterior incision was made. About one pint of the same thin, greenish-yellow pus was evacuated. Careful examination revealed a mass of granulation tissue which had replaced the synovial membrane. And a carious condition of the neck of the humerus. The mass in the axilla proved to be a mass of enlarged lymphatic glands; there being other enlarged glands present. Some of the glands were removed for examination. The pectoral, and nearly all the smaller muscles about the joint, were thoroughly infiltrated with inflammatory material, so much so that no attempt was made to remove them at that time. The wound was washed out and packed with iodoform gauze. Patient stood the operation well. Careful and prolonged search in the scrapings of the abscess walls and in the glands removed demonstrated tubercle bacilli. Temperature and pulse both dropped to normal with slight evening rise. The diagnosis was now certain, but the prognosis grave. Excision of the joint or even amputation in the joint would not remove all the diseased tissue; treatment through the open wound would only prolong the end a few weeks. The patient being an old man in an

insane asylum, could never be of any further good to humanity; nor did his capacity for personal enjoyment amount to much. But he had no pulmonary complications, and for the sake of scientific medicine, and in view of our duty to every unfortunate under our care, it was decided to give him the benefit of a thorough and more radical removal of all the diseased tissue.

On October 11th, under chloroform, an interscapulo-thoracic amputation was done as follows: The clavicle was exposed, the middle third removed, and the subclavian vessels tied with chromicised catgut. The anterior incision was then made and covered with sponges while the posterior flap was formed. The diseased glands and muscles were then carefully dissected away, the pectorales, latissimus dorsi, and seratus magnus muscles being almost entirely removed. The wound was closed with silk worm gut. There was very little loss of blood, but a good deal of shock. The patient soon rallied. Temperature went to 100 degrees F. the next day, but after that never went above normal. The stitches were removed about the eighth day, and the wound rapidly healed without further trouble. The patient is now, six months after the operation, well, without any evidence of pulmonary lesion.

So far as I can learn this is the only time advanced tuberculosis of the shoulder joint has been treated by interscapulo-thoracic amputation. It would be folly to treat all cases of tuberculosis of the shoulder joint so radically, as many arms may be saved by excision but recurrence may require further operation when thorough amputation may be effective. Nor would it be wise to amputate in the face of serious lung complication, when life at the most will not last long. Still, the operation may effect a cure in some of the more serious cases.

November 24th, the guinea pig was killed and autopsied. All the lympathic glands were enlarged and some suppurating. Careful search revealed tubercle bacilli in the scrapings from the abscess walls.

I am indebted to Doctors M. L. Graves, G. H. Moody and James Grenwood, Jr., for assistance throughout the case.

DISCUSSION.

DR. WM. KEILLER, Galveston: I think the doctor's treatment of the case was a little too radical. Of course, it is an easy thing to criticize the treatment of a case which we did not see, and know very little about. It seems to me, though, that thorough drainage of the part would have given good results. I can realize that there is considerable difficulty in treating properly an insane patient. The danger in these conditions is not so much the danger of shock as the danger from embolism, and the danger is so great that I should feel a great deal of hesitation in advising a patient to submit to such an operation for tuberculosis of the shoulder joint until everything else had been tried.

DR. E. J. MELLISH, El Paso: I agree with the gentleman who last spoke that this is a very radical procedure for that kind of a case. The carbolic acid treatment, followed by alcohol, has done wonders in a large number of cases of that kind. It would seem that some such measures should be tried before resorting to any such radical procedure as was done in this case. To be sure, this particular individual was not of any particular account in the community, and perhaps it was justifiable to demonstrate what could be done. The treatment by injecting pure iodine into the joint has not been mentioned in this discussion. I will state that wonders can be accomplished in these cases by this treatment. This can be injected with as much impunity as can iodoform, if not greater. It is not absorbed quickly, as one would suppose, but is absorbed slowly, and destroys the tubercle bacilli very effectually. After resorting to that kind of treatment, we still have the X-ray, which is doing a great deal in cases of localised tuberculosis. Many good results have been reported in its use in cases of tuberculosis of the joints.

DR. BACON SAUNDERS, Fort Worth: My experience in these cases is limited to three. One was a child as young as six years, another was fifteen, and another a little older. All three of the cases did well and recovered promptly.

DR. WILMER L. ALLISON, closing: I have not much to say in closing. I do not wish to be understood as advising that this operation should be resorted to in every case. Many cases can be cured without it, but if it has gone too far, I think the operation is absolutely necessary. When you find cases without any pulmonary complications whatever, and you know it is going to kill your man, carbolic acid nor anything else will save them except the removal of the entire affected part. Many of these cases are operated on, and seem to do finely for awhile, but the part has to be removed later on.

REFLEX CONDITIONS COMPLICATING MOVABLE KIDNEY, WITH REPORT OF UNUSUAL CASE.

J. M. INGE, M. D., DENTON.

The influence of trauma in the production of movable kidney is a subject of much interest and importance, especially to the railway surgeon. That about 50 per cent of cases of movable kidney present no symptoms and require no treatment is a fact fairly well established. Therefore, in many instances, a diagnosis of movable kidney is made following an injury to which it is attributed when the condition existed before. It goes without question that movable kidney is now considered much more common than was so recognized even only a few years ago. Early observers discovered its more frequent occurrence in women than in men, the author never having met with a case in a man while seeing quite a number in women.

Dr. Harris, of Chicago, offers reliable statistics to disprove the theory of frequent pregnancies or trauma as etiologic factors in movable kidney and further states that he has demonstrated by a series of careful measurements of the body form that there was a distinct relative contraction or diminution in the capacity of the middle zone of the body in all individuals with movable kidney. While the condition may exist as a result of such deformity I am of the opinion, coming from my own observation, that trauma sometimes plays an important part in aggravating the condition and developing the symptoms due to movable kidney.

The symptoms giving most trouble with cases coming under my observations have been reflex in character, although I have observed cases with severe local pain in the region of the kidney requiring an anodyne to procure rest at times. Other prominent symptoms are neurasthenia, and gastro-intestinal disorders, indigestion and palpitation. Some of the most annoying cases of hysteria I have

yet known were in cases of movable kidney. In one that presented the most marked reflex symptoms I have ever seen the displacement was slight compared with other cases that presented no symptoms and required no treatment.

Reflex symptoms are common, such as neuralgic pains in different parts of the body, violent muscular contractions, which are usually paroxismal, not only of the abdominal muscles but other muscles of the body, such as the psoas and iliacus. The cases of vomiting and gastro-intestinal symptoms may be due to the complication of enteroptosis, dragging, upon the duodenum, or, in other cases, may be due only to reflex conditions.

That the rest treatment, with careful attention to nutrition, to toning up the patient and developing the muscular system, will relieve many cases has been amply proven. When relief is obtained for mechanical support, such as swaths and abdominal bandages, the symptoms relieved are probably due to enteroptosis, lax abdominal walls and want of substantial support of abdominal organs more than to movable kidneys.

I call to mind a case coming under my care fifteen years ago or more with such gastric disturbance and persistent vomiting that rectal feeding was resorted to for more than eight weeks and the patient came near dying from inanition. I supposed for awhile I had gastric ulcer or some malignant trouble of stomach or duodenum. In her extremely emaciated condition I was able to more successfully outline the organs of the cavity of the abdomen and finally found a dislocated and movable kidney. By exercising care day by day to keep the kidney in normal position and keeping patient mostly upon her back with body on level plane I was soon able to give her nourishment by the stomach. She was gradually restored to health and is yet a healthy woman.

I was recently called to a case of a young lady who has been practically an invalid for more than five years and came near dying several times from starvation. The physicians treating her diagnosed gastric lesion. She was treated by stomach lavage and all the means usually resorted to for chronic gastritis. Her last phy-

sician finally concluded that her indigestion and gastric symptoms were due to reflex conditions. At the first examination I verified movable kidney of the right side. I have not been able after further thorough examination to find another cause to account for her symptoms and have advised an operation to anchor the kidney.

That such an authority as Aaron has taken the position that about 95 per cent of patients can be cured without surgical intervention, and with properly fitting bandages or support, and that Goelet takes the view that practically all cases should be operated on, only tends to confirm the author in his previous views that each case should be dealt with upon its individual merits, and that while probably 50 per cent or more will suffer no inconvenience from movable kidney other patients will remain practically in a state of invalidism but amenable to cure by surgical treatment.

In verification of this position I submit the following report: A lady, aged 24, unmarried, height about five feet, seven inches, weight 150 pounds, was referred to me by her physician. She was troubled with various reflex symptoms, among others, violent paroxysms of muscular contraction, more especially of the abdominal muscles, the recti becoming almost as firm and terse as wood over the region of the stomach. This symptom was so persistent, though exaggerated during the paroxysms, that her physician insisted that she had a fibroid of the stomach. The paroxysms were associated with local pain in the region of the right kidney, and palpitation. Soon after I had made a diagnosis of movable kidney of right side and was preparing her for the rest treatment, she was called home to be placed in the hands of some traveling charlatans. I saw no more of her for more than a year, when she returned to me with the history of having taken various nostrums to no benefit, and that she had gradually grown worse until she was practically an invalid. In addition, the symptoms mentioned were more decided and the local pain so severe she could not sleep without anodynes, and further, she had a well marked case of lateral spinal curvature in the dorso-lumbar region, convexity to the right. The deformity was so decided that her skirts seemed

about three inches shorter upon the left than the right side, and her limping movements were noticeable for a great distance upon walking. The decided elevation of the left shoulder above the right and near approximation of the floating ribs to the crest of the ilium upon the right side gave evidence of a decided deformity. The deformity was not only constant, requiring a semi-reclining position for comfort at night, but had persisted for many months with no indications of improvement. I naturally looked about for some other cause than a dislocated and movable kidney for the condition I had to deal with. This led me to inquire more fully into the history of her case. Her parents were living and healthy and from vigorous ancestry who had attained old age. Brothers and sisters living and vigorous. She was an unusually fine specimen of physical womanhood, in every particular, until several months, perhaps more than a year, before I saw her, when she sustained an injury from a violent fall from a horse which she was riding at a racing speed, the horse going into a ditch or sink and turning a somersault sending her high in the air, the impact and shock causing temporary unconsciousness. From that date she complained of pain in the region of right kidney, which gradually grew into the condition given. I consulted a surgeon in whom I had confidence, from the fact of his having had advantages in observing the management of such cases, as to the advisability of anchoring the kidney. He advised adjusting a brace for the spinal curvature, and was of the opinion that the movable kidney had little or nothing to do with the deformity, but I decided that if the anterior abdominal muscles would contract with such intensity and that the irritation of the movable kidney would produce other reflex conditions, such as were then in evidence, that probably the psoas magnus and iliacus muscles would contract with like intensity and pull the spine into a lateral curve. Taking this view I soon decided upon an operation which I did by the usual incision in the lumbar region, exposing the kidney by removing or reflecting the fatty capsule and a good area of the fibrous capsule. The flaps were included in the strong silk sutures upon each side, through skin,

muscles, fascia and a portion of the cortical substance of the kidney. I left the patient in care of another surgeon. When I left her home, being some distance away and hearing favorable reports from her, I saw her no more until three weeks from the date of operation. Stitches were removed on the twelfth day. When I called at the door of her room, twenty-one days from the day of operation she was seated by her bed making "fancy work." She arose, perfectly erect, met me with extended hand and remarked: "See how straight I am." She was and is still as erect as she has ever been, though several years have gone by. She married and is the mother of two healthy children. Some slight symptoms of neurasthenia recurred at short intervals for awhile, but she has had no further symptoms of spinal curvature, and all reflex symptoms, such as muscular contractions and pain, passed away to recur no more since the date of repair of the wound.

Dr. Harris, of Chicago, in his excellent article published in the Journal of the American Medical Association of February 13, 1904, makes use of this language: "The more the subject is studied the more it becomes evident that those in whom movable kidneys are found are defective in bodily force; that they deviate in some particular from the highest normal type," and quotes an authority to show that movable kidneys are found in individuals with the "bodily stigmata of degeneracy." But he does not seem to consider that a defect in bodily conformation may be the product of muscular contraction, which is a reflex condition from irritation from the abnormal position and friction of a dislocated and movable kidney. I give the report of the above case in evidence that, if his position is correct in the main, there are exceptions to the rule.

Dr. Harris reports a large number of cases of movable kidney, and in every case he found the characteristic contraction of the middle zone of the body, and asserts that movable kidneys occur in women with a particular body form and practically all women with this body form have movable kidneys of greater or less degree. In his twenty-sixth case, besides the other body defects, he found

lateral curvature of the spine, which he mentions as additional evidence of the existence of body defects in those who develop movable kidney. But I submit above report of case in evidence that in some degree movable kidney may be the cause rather than the result of some conditions found in all cases.

DISCUSSION.

DR. J. E. GILCHREEST, Gainesville: I was very much interested in Dr. Inge's paper, and I think he has covered the subject quite well. One very peculiar condition of this patient was the spinal curvature, resembling caries of the vertebra. While these patients are frequently drawn a little towards the affected side, I never had seen or heard of one with such typical spinal curvature. I have had only three cases of floating kidney in which I operated. The first case was a lady about 35 years of age, who was the mother of one child 7 years old. She had not been in good health since the birth of her child. She was examined by a physician several months before I saw her, and was told that she had floating kidney. Upon examining her, I found the kidney was very movable, right ovary enlarged and tender, uterus antiflexed, and a severe chronic endometritis. Her mind was fixed on the kidney, and she did not want anything done except the kidney anchored. I did a nephrorrhaphy, and immediately after curetted the uterus. She did quite well for several months, but afterwards wrote me that she was suffering from nervousness and painful menstruation. The second case was a woman about 34 years of age, who was a mother of three children. When I first saw her she had an acute attack of hydronephrosis, which passed off, and she was able to go to her home. In about twelve months after this she gave birth to a child, and did well until after she commenced exercising, then she felt a dragging sensation in her right side, and had some bladder, gastro-intestinal, and nervous symptoms on account of which she consulted me about the middle of January, 1903. I found her urine normal, but the right kidney was very movable, having a range of mobility of at least four inches. I advised her to have the kidney fixed, but she decided to wait until she could wean her baby. On the last of August, 1903, she had another acute attack of hydronephrosis. The kidney was as large as a child's head and was very painful and tender. It had existed five days when she was brought to the sanitarium. This commenced in a few days to subside, and in about four weeks she felt as well as usual. I advised her to go home and take good care of herself for a month, then return and have the operation. She did as I advised. After the operation all went well until the fifth day, when she had an

attack of hepatic colic, and the gall bladder became very much distended. She was also slightly jaundiced. All of this trouble, though, subsided in about a week, and her recovery from henceforward was uninterrupted, and her health has been very good since. The third case was that of an unmarried woman, 27 years old. She was rather slender and delicate. She came to me in March, 1903, complaining of a pain and uneasy feeling in her right side all the time, often becoming quite severe. She was very nervous, and had a good deal of stomach and bowel trouble, and suffered with headache all the time. Examination revealed much sensitiveness about both ovaries and the appendix, and also the right kidney, which was very movable—would hang down three inches below its normal position when she was standing. I gave her some preparatory treatment for three weeks and then anchored the kidney. She made a good recovery and has been much improved in health since, but she still suffers some from nervousness.

DR. R. CAFFERY, San Antonio: The Association is to be congratulated upon having heard this excellent and able paper. It so thoroughly reflects the observations of most practitioners that there is little to be said. I would like to ask Dr. Inge to account, in his closing remarks, for the disproportion between cases of floating kidney in females and in males. I think this is a question which has not had attention called to it, and I would like to hear his opinion.

DR. S. C. RED, Houston: I would like to ask Dr. Inge the nature of the fall. Did the patient fall on her face and shoulders, on her back, or where? My experience shows that it requires quite a serious blow if movable kidney is produced. I have seen in the course of routine examinations numbers of cases of movable kidney. About two months ago I was called as an expert to see a case of this kind in which the movable kidney was alleged to be the result of an injury. The injury, however, developed to be elsewhere. Taking into consideration the attachments of the kidney in normal individuals, we would expect a very considerable force to be required to produce what we call "floating kidney." Unless the injury in this case was severe, I would be loath to believe but that the kidney symptoms were chiefly psychic.

DR. W. R. BLAILOCK, Dallas: I have nothing to add to the very excellent paper read by Dr. Inge. But for a remark made by Dr. Gilcreest in opening the discussion, I would not speak. The doctor spoke of a patient having a complication. I wish to call attention to the frequent coexistence of gallstones or appendicitis and floating kidney. I think we should make it a rule to never operate on these cases without carefully examining the appendix and the liver.

DR. O. I. HALBERT, Waco: I am under the impression that there is a

psychological aspect to these cases that should not be lost sight of. It is possible that the psychical effect of this operation had as much to do with curing this patient as anything else.

DR. W. P. DUNBAR, Campbell: I have under observation a case of anterior spinal curvature with movable right kidney, in which the gastric reflex is well marked. I report this merely to emphasize the points brought out in Dr. Inge's paper that reflexes are due to movable kidney, and movable kidney, more often the right, is due to spinal curvature.

DR. H. B. HILL, Austin: In regard to the greater frequency of floating kidney in females than in males, I think that this has been ascribed to the form of dress adopted by ladies. The corset forms an unyielding surface to the abdominal viscera, and leaves no room for the movements of the intestines. The distended colon is wedged back against the kidney, which tends to force the kidney down. The subject has not been entered into very fully, but this has been assigned as the probable cause of the greater frequency of this condition in females than in males.

DR. EDWARD RANDALL, Galveston: I think that the paper is of extreme importance to us, because it calls our attention to the commonness of floating kidney, or misplaced kidney. Perhaps we have all seen these cases, and those of us who have failed to recognize the condition have probably been at fault. These cases are so common that I do not consider an examination complete until the kidneys have been examined by palpation. Perhaps the symptoms most frequently seen are those exhibited in what we call neurasthenia. Neurasthenia plays a very important part. I see the condition much more frequently in females than in males, and attribute this to the greater tendency to neurasthenia in females. I do not believe that all these cases should be operated upon. The vast majority do not require operation. Very frequently all that is required is the building up of the strength of the patient, and keeping her in ignorance of the displacement. The condition is so frequently associated with functional disorders of various kinds that we can not put our fingers on any particular thing as the cause of the condition. We must study the patient rather than the disease.

DR. I. C. CHASE, Fort Worth: I have found that a true case of movable kidney following traumatism has been rarely observed. For this reason the following will be of interest. The patient was a young man, 26 years old; tall, slender, and considerably emaciated from what I afterwards discovered was pulmonary tuberculosis. When first seen he had been carried to his home from a ball. During the dance he had been struck at the right side of the spine just below the twelfth rib by the elbow of a

short, heavy man. He fell to the floor almost unconscious, and, when I saw him, was suffering great agony and in a condition of profound shock. After the administration of an opiate, physical examination disclosed the right kidney in the neighborhood of the umbilicus. The kidney was replaced and abdominal supporter used. The patient lived for about three years, requiring constantly the use of the abdominal bandage, and troubled during this time by frequently recurring displacement of the organ, accompanied by pain and the usual genito-urinary disturbances. I think this undoubtedly was a case of traumatic movable kidney.

DR. E. J. MELLISH, El Paso: My impression is that this last case related was not a case of traumatic floating kidney. I think it was merely a case of traumatism of an already misplaced kidney. It seems to me that the contraction of the middle portion of the body, produced, generally, by the wearing of corsets, which is begun during the developmental period of the girl's life, and the resultant wasting away of the fatty capsule, are sufficient to account for practically all cases of movable kidney.

DR. A. L. HATHCOCK, Palestine: These cases are all interesting to me, and I have seen two cases that appeared to furnish an additional reason for operating on all except perhaps those that are very slightly movable and cause no symptoms. Both these cases were old ladies dying with carcinoma of the kidney. In each case there was a clear history of movable kidney that gave more or less trouble throughout life and the malignant growth followed upon this in the same kidney and it seemed to me probable that the former had acted as a predisposing cause of the latter. An autopsy showed the cancerous kidney fixed at the brim of the pelvis in one case and in the right iliac fossa in the other.

DR. S. BURG, San Antonio: In regard to the subject of floating kidney, I do not think that I can add anything to what has been so ably put forth by the author, and the different gentlemen who have spoken. I would like, however, to mention a case of somewhat mixed diagnosis. It was a case of a woman who had been operated upon in the San Antonio City Hospital by Dr. F. Paschal for supposed floating kidney. The patient was suffering from those symptoms which usually are found in cases of floating kidney. Upon examination there was found, under the right epigastrium, an oval shaped, round, movable body, just as you would find in palpating a movable kidney. No symptoms were cited by the patient, nor could any be detected, indicating liver or gall bladder trouble. The patient was operated upon for movable, or, rather, floating kidney. The incision was made by Dr. Paschal in the regular way, I assisting in the operation. I pressed the tumor from the abdomen into the wound in order to facilitate the operation. The tumor looked rather peculiar, rather cystlike. The

supposed capsule of the kidney was incised and then a deeper incision was made, and we found the tumor to be the greatly distended and thickened gall bladder. This was stitched to the wound, and the patient after a comparatively short time made a perfect recovery.

DR. INGE, closing: In reference to the more frequent occurrence of this condition in females than in males, I am unable to give any reason why this should be so. It may be because they are not so vigorous as males. Men live out in the open, and have a stronger constitution. I believe that wearing the corset and the life they live has a great deal to do with it. My understanding of the case I reported is that she fell upon her shoulder. I want to say in regard to this case that she was a very vigorous woman, almost an athlete. She lived on a ranch, hunted and rode a horse. She had red cheeks and strong muscles. In cases of neurasthenia, we can cure by suggestion very often, as has been suggested. I have dealt with a great many such cases. I kept this woman in bed four weeks, and could see no improvement in her condition. I placed the kidney in position, etc. I was called to see her in the night on account of the paroxysms. When you can not accomplish a cure by suggestion, the proper thing to do is to operate.

EXSTROPHY OF THE BLADDER—TREATMENT OF SUCCESSFUL CASE—IMPLANTATION OF BOTH URETERS IN RECTUM BY THE METHOD OF MAYDL.

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The treatment of the distressing deformity known as extroversion or exstrophy of the bladder was the despair of all surgeons until the remarkable results obtained by Maydl in 1894, by the implantation of the ureters into the sigmoid flexure of the colon, showed that the condition could be treated with comfort and a fair degree of safety. The evolution of Maydl's operation from the earlier procedures was necessarily slow, for, like most surgical developments, much close and attentive study had to be paid to the physiological problems involved and the proper technique to employ.

Strangely enough, as will be shown later on, experimental work on dogs was entirely misleading; the results being almost uniformly unfavorable in these animals. The unsatisfactory nature of any of the plastic methods employed to remedy the deformity was evident to most of the surgeons attempting to relieve it; because in no event was it possible to do more than cover in the bladder wall and produce a receptacle that, at the best, would hold a few drams of urine, or divert the ureters and attach them in such a position as to enable the urine to drain without difficulty into a receptacle.

From time to time we find a surgeon, more bold than the rest, attempting to divert the urine into the rectum. The first operation of this kind was performed by Lloyd (London Lancet, 1851, page 370), who attempted to establish communication between the bladder and the rectum by means of a silk thread, which was passed through the contiguous vesical and rectal walls by means of a curved needle introduced into the rectum. The needle carrying

the thread penetrated from the rectum toward the exposed vesical surface; the thread was then detached and the needle withdrawn. Lastly a skein of silk thread was drawn along the same track and left in situ as a seton. The case died on the seventh day after the operation, and the cause of death was found to be purulent peritonitis. Following this came an operation by Simon (London Lancet, 1852, page 568). By a specially made catheter, having a stilet of watch spring with sharp point in which was an eye for a thread, he penetrated the posterior wall of the ureter a short distance above the vesical orifice, and succeeded in entering the rectum and withdrawing the thread from the eye. Another thread was passed in the same manner at a point half an inch lower down the ureter. The rectal ends of the two threads were knotted together and traction was exerted on the ureteral ends. The same maneuver was repeated on the opposite ureter. Convalescence was attended by slight peritonitis and fits of vomiting. Three weeks after the operation almost all the urine was passing into the rectum. On the thirtieth and forty-first days the ligatures came away. For months after the operations, as some urine still trickled from the orifices of the ureters, an attempt was made to close the openings by needles and hare-lip pins, but without avail. Death occurred within the year with extreme suffering from disease of the ureters and kidneys.

Next came an important case reported by Thomas Smith (St. Bartholomew's Hospital Reports, 1879, XV, page 229). He conceived the idea of transplanting the ureters into the colon extraperitoneally. The first operation was performed on June 19, 1879, the left ureter being implanted into the descending colon through a lumbar incision. A small opening was made into the colon and the divided end of the ureter pushed into it so as to protrude about half an inch into the cavity. The result was apparently a complete success. Second operation was performed on August 28, 1880, fourteen months after the first, the right ureter being implanted into the ascending colon. The patient died fifty hours after the operation. The post-mortem examination revealed no trace of peritonitis. The pelvis of the left kidney was found dis-

tended with clear fluid having the appearance of urine. No trace of true renal structure could be found. The parenchyma had been absorbed and was represented by a wall of fibrous tissue containing fluid (hydronephrosis.) A probe passed down the ureter could not be made to enter the bowel. The right kidney was much enlarged, being as large as the organ in an adult. The capsule adhered to the cortical substance, which was soft and friable and contained many small cysts. The medullary substance was much softer than natural. The descriptions terminate with the remark, "that, setting aside the difficulties and dangers of the operation, it would appear that a permanent and direct communication between the ureter and the bowel is in itself a fatal lesion."

For a number of years the operation seems not to have been repeated. Then Kuster, in 1891, after removing the bladder for cancer, implanted both ureters into the rectum, but the patient only lived five days. The autopsy revealed peritonitis and kidney infection. Chaput, in 1892, reports one case of unilateral implantation with success, and another case of bilateral with death from uremia. This last case was divided into two stages, death following the same day after the second ureter was implanted. Other operators, viz.: Rein, 1894; Duplay, 1894; Trendelenburg, 1895; Schnitzler, 1898; Truetta, 1899; Krause, 1899; Wood, 1899, and Martin, 1900, reported cases of bilateral implantations, all with fatal results. Successful results were reported after bilateral implantations by Chalot, 1896; Peters, 1899; Krause, 1899; Fowler, 1896; Tuffier and Dujarnier, 1896, and Beck, 1899.

Peterson gives the mortality of bilateral primary implantation of the unguarded ureters at 44 per cent. The ultimate mortality must be much higher, as ascending pyelitis is present in the majority of cases, and, although the immediate effect can be recovered from, the remote results will be disastrous. Thus Wood, in 1899, showed before the Brooklyn Pathological Society the kidneys of a patient suffering from exstrophy of the bladder, both of whose ureters two months previously had been implanted into the rectum by Fowler's method. There was marked pyelo-nephritis.

The list of recoveries is, however, sufficiently remarkable to

show that under certain conditions, which we do not properly understand, pyelitis does not necessarily follow the implantation of an unguarded ureter in the bowel. Or, if it be conceded that pyelitis does occur, that it is possible for the kidney to recover from the infection. In one of Peterson's experiments in dogs the animal that lived the longest showed indisputable evidences of a healed pyelo-nephritis. Contracted kidneys had resulted on both sides. (Journal Americal Medical Association, March 16, 1901, page 738.) A resumé of the successful cases is of great interest.

Chalot. Cancer of the uterus; bilateral uretero-rectal anastomosis; recovery; living one year after the operation. *Method of operating.*—Author's specially constructed tube.

Fowler. Exstrophy of the bladder; bilateral uretero-rectal anastomosis; recovery; well three and a half years after the operation. *Method.*—Flap method; the ends of the ureters being applied close to the mucous membrane of the bowel, which was doubled up to form a recess. This method was original.

Tuffier and Dujarnier. Cancer of bladder; excision; bilateral uretero-rectal anastomosis; death seven month later; no autopsy. This case had leaking of urine from suprapubic fistula; therefore, it can not strictly be classed amongst the other cases.

Peters. Exstrophy of the bladder; bilateral extra-peritoneal uretero-rectal anastomosis; recovery.

Krause. Removal of bladder for cancer; implantation of both ureters into sigmoid; recovery.

Beck. Tuberculosis of bladder; bilateral implantation of both ureters into the sigmoid; recovery.

The contrast between the results obtained by the axial implantations into the bowel and those reported by Maydl in 1894 of implantation of the trigonal orifices is very striking. Maydl utilized the principle suggested by Tuffier of transplanting the vesical orifices of the ureters into the rectum to prevent ascending infection and stricture, and reported two cases with two recoveries. His method was to dissect out the two ureteral orifices, together with an oval area of the trigone, the edge of the area being about 1½ c.m. away from the orifices. The ureters were then liberated from

the tissue in which they were imbedded and lifted up with the trigone attached. The rest of the bladder wall was then excised. The sigmoid flexure was pulled out of the wound, an opening made in its convex border, and the trigone and ureters placed inside the bowel. The opening in the bowel was then closed with two layers of sutures, one uniting mucous membrane, the other muscular and serious coats. That the preservation of the trigonal orifices of the ureters prevents ascending infection passing from the rectum to the kidney has been proved beyond denial. Thus in 1899, only seven years after the first operation was performed, Maydl collected twenty operations, including his own, with only three deaths. This makes a mortality of a little over 13 per cent, which, considering the difficulties encountered and the delicate nature of the procedures involved, is little short of remarkable.

Still, in spite of the facts observed clinically on man, experimentation on dogs showed the same disastrous results notwithstanding the precautions taken in operating. Thus Matas (Journal American Medical Association, July 29, 1899, page 260) performed a typical Maydl's operation on two dogs with a fatality in both, one dying in twenty-four, the other in thirty-six hours. In neither was there leaking of either urine or feces. The grafts were perfect. But in both there was evidence of septic peritonitis caused, so Matas thought, by infection from the bowel during the operation. In the dog that survived thirty-six hours there were evidences of a very intense hyperemia of the kidneys.

Connell (Journal American Medical Association, March 9, 1901, page 635) also failed in his experiments on three dogs with the typical Maydl operation (experiments 20, 21, and 24, page 666). In these cases death resulted with evidences of peritonitis and ascending infection of the kidney. He remarks that the cause of the peritonitis is difficult to arrive at.

Peterson's experiments on dogs show better results. By improving the technique and operating so as to preserve the vesical arteries supplying the trigonal flap, he managed to secure five recoveries out of twenty-one dogs operated on. His results go to show that in dogs the vesical orifice of the ureter does protect

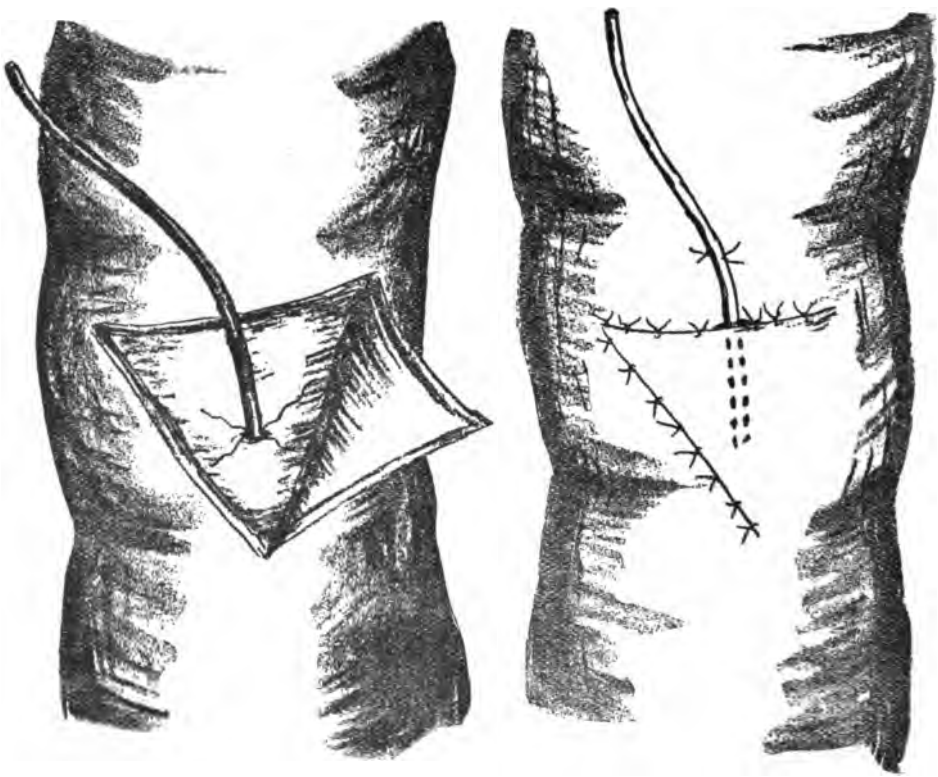
against intestinal infection. (Journal American Medical Association, March 23, 1901, page 808.) To quote his own conclusions (page 811, *loc. cit.*): "Summarizing the results of these five experiments, we find that in one case the ureter was occluded from faulty technique with the formation of an atrophic kidney. Of the four remaining cases, one had a non-infected kidney where the trigone was implanted intact, and a pyelo-nephritis on the other side where a uretero-rectal anastomosis by the old method had been made. One died in forty-four days from active pyelo-nephritis, where the mucosa over the ureteral orifices had been accidentally removed. One lived two months without signs of infection in the kidneys. One had pyelo-nephritis after eight days, where the mucosa was removed from the ureteral orifices, but no signs of infection in the other kidney where the trigone was implanted intact."

The almost uniformly fatal results following implantation of the human ureters, unguarded by the vesical orifice, into the intestinal canal shows that the kidneys are just as susceptible to ascending infection as those of the lower animals. Perhaps, in the future, we may be able to implant an unguarded ureter into the intestine with safety; but, at present, the operation is so sure to be attended sooner or later by destruction of the kidney that it almost amounts to a nephrectomy.

The technique of the various methods of ureteral implantations has received much study, and from the experimental work of the investigators we have learned much concerning the best way to prevent urinary and fecal extravasation. The names of Krynski, Fowler, Martin, Van Hook, Beck, and Peterson are inseparably connected with the literature of the subject. The consensus of opinion seems to be in favor of an oblique insertion of the ureters into the intestine, the ureters coursing for some distance between the muscular and submucous layers before entering the lumen of the gut. To affect this the muscular and serous layers are thrown up in form of a flap (*Krynski*, Beck), or dissected back like skin flaps (Fowler, Martin), an opening being made in the mucous membrane at the most protected place, through which the ureter

is inserted, after which the muscular and serous coats are sutured back into place, and if necessary the coats of the intestine puckered over the line of implantation by Lembert's sutures.

The method of holding the ureter in place is deserving of the greatest consideration. In the main, the method of Van Hook is



the best. This is as follows: A thread is armed with two needles, one at each end. Each needle is thrust through the wall of the ureter from within outwards and the ends of the thread drawn tight, thus controlling the ureter by a loop. The gut is now opened in the most approved manner, and the needles are passed in at the opening and made to penetrate the wall close to one another from

within outwards, at a distance of about one-half inch below the edge of the opening. The ends of the threads are now dragged on, and the ureter pulled into the lumen of the bowel. The threads are then knotted firmly, thus fixing the ureters in their new position. The opening in the gut is then closed firmly around the ureters, and one or two Lembert's sutures are placed over the knot retaining the ureter in position. (In performing the typical Maydl operation the retaining thread must not be passed into the lumen of the ureter, but either through the wall of the ureter not entering the lumen, or through the substance of the trigone.) Much stress has been laid on the advisability of allowing the open end of the ureter to lie free in the cavity of the bowel (Tuffier, Beck). Fowler, on the contrary, in his successful case, attached the end of the ureter to the apex of a flap of mucous membrane with the idea of making a valvular opening. As a matter of fact, it seems, from a view of cases operated upon, both in dogs and in man, that the position of the ureteral orifice has nothing to do with preventing ascending infection.

Another point in technique that is of the greatest importance is how to place the sutures between the intestine and the ureter along the intestinal tunnel (if one may use the expression). One suture should be placed uniting the ureter and the edge of the opening in mucous membrane. The finest needles and the finest silk should be employed and care should be taken not to penetrate the lumen of the ureter. Then with the same care the intestinal flap should be fastened down; and if necessary an omental graft placed over the line of incision, or the suturing reinforced by tucking it in by a few Lembert's sutures.

The cases of exstrophy that have been under my treatment are three in number. The histories of the cases are briefly as follows:

Case No. 1.—M. O'K., aged 6 years, female, white. Came under my care in November, 1898. The case was one of complete exstrophy. The pubic bones were ununited and two inches apart. The external genitals were divided into two homologous halves. The vagina was fully developed, the external opening being guarded by well-developed hymen having an oval hole in the center large

enough to admit a pair of artery forceps. A sharp ridge divided the vagina from the bladder. Immediately above the ridge the apex of a rudimentary trigone commenced, at the basal angles of which the slit-like orifices of the ureters presented. The orifices were surrounded by tuberculated projections of mucous membrane and the left orifice was a little higher than the right. The mucous membrane of the bladder was completely prolapsed when the patient cried, but could be reduced with ease between the edges of the separated recti muscles until it formed a cavity as large as a mandarin orange. When the patient was given an anesthetic the reduction was so complete that the edges of the fissure were quite near together and the bladder was reproduced. This suggested a possibility of forming the urinary bladder, which was attempted at the first operation.

First Operation.—The edges of the bladder were dissected from the skin all around the upper and lateral aspects, and from the deeper connections for a distance of about one-half inch. The mucous membrane was then inverted and the raw surface of the muscular coat united by sutures applied in the same way as Lembert's intestinal stitches. Flaps were then cut from the groin and abdominal wall, as in Thiersch's operation, and they were superimposed at once on the raw surface of the bladder. A large catheter was passed under the lower edge of the united bladder walls to drain off the urine. The operation was a failure. The bladder walls parted company and the flaps separated also. *Second Operation.*—(Three weeks after the first.) Ureteral catheters were passed into the ureteral orifices and temporarily tied there. The bladder wall was now systematically dissected away leaving a portion of mucous membrane around the ureteral papillæ. This was tedious and bloody, but was accomplished without opening the peritoneal cavity. The ureters were now dissected from their beds, and a puncture made between the wound and the vagina just above the hymen, through which the ureters were drawn. They were secured by sutures in this position. The operation was attended by considerable hemorrhage and followed by much shock. For a few days the child was in a critical state,

suffering from nausea, vomiting, quick pulse and high temperature, with a facies that suggested some peritoneal complications. Eventually, however, the child recovered. For one year after the operation trouble ensued at the ureteral orifices. Calculi formed in the vagina, which were removed with difficulty. Since that time none have formed. (The method of operating in the case was essentially unsatisfactory. I wished to try a Maydl's operation, but after discussing the possible dangers with the parents they declined.) The vagina does not form a receptacle capable of holding much urine, and the utmost that was done in this case was to make the wearing of a receptacle easier for the child and to remove the ulcerating vesical mucous membrane.

Case No. 2.—B. S., female, colored, aged 26 years. Operation March 29, 1901. Also a case of complete exstrophy, like case 1. The recti muscles were wide apart. The pubic bones were ununited. The external genital organs were divided. The hymen was intact, an oval opening leading into a well-developed vagina. The trigone was poorly developed and the ureteral orifices were asymmetrically placed, the right one being placed lower than the left and almost hidden from view underneath a button of hypertrophied mucous membrane. The operation was performed on March 29, 1901. The ureters were catheterized and the catheters temporarily tied in by ligatures passed around the ends of the ureters. The bladder was now dissected away, with the exception of an oval piece of trigone which was left attached to the ureteral orifices. The ureters with the attached piece of trigone were now lifted out of their bed, and dissected back into the broad ligaments until the uterine vessels were reached. Then the peritoneal cavity was opened and the ureters still further liberated. A length of each ureter of about two inches was now available. The uterus with its appendages was now inspected. It was infantile and the ovaries were small, but otherwise all were normal. It was found that a greater length of ureter could not be obtained without division of the broad ligaments; and, as this, to be safe, would probably have necessitated a hysterectomy, the idea was given up.

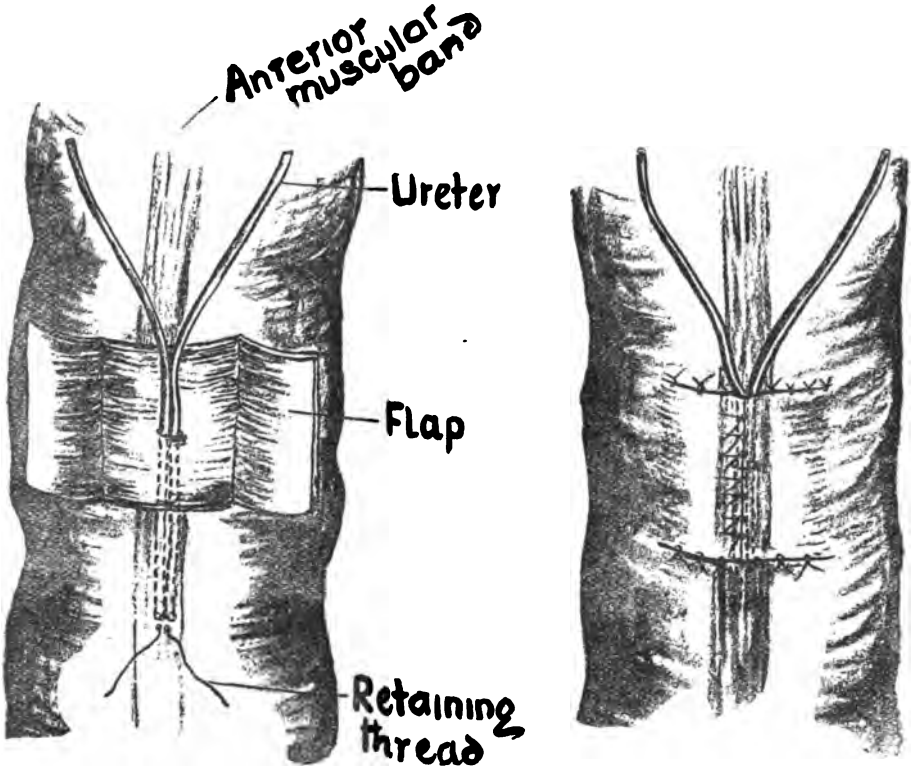
The sigmoid flexure was now brought into view and was found

to have a very short mesentery; so short as to render further manipulations very difficult and unsafe. Clamps were applied above and below the site for implantation and the gut opened on its convex surface. Attempts to suture the ureters in the bowel were so unsatisfactory, owing to the impossibility of applying the stitches without tension, that I decided to abandon the operation. So the ureters were withdrawn, and the opening in the intestine closed with Lembert's sutures. The ends of the ureters were then stitched to the margin of the hymen and the abdominal cavity closed without drainage. The patient suffered from severe shock but eventually recovered without serious symptoms. It was a source of much regret that the operation had to be abandoned. Owing, however, to the impossibility of coaptating the ends of the ureters and sigmoid without tension, accurate suturing was a physical impossibility. I feel certain that, if I had trusted to the sutures, leaking would have occurred and the case would have terminated fatally. This shortness of the sigmoid mesentery was encountered by Park in his case and was the cause of deficient suturing followed by leaking with death from peritonitis (Medical News, May 29, 1897, LXX, page 702). The patient refused further operative procedures.

Case No. 3.—L. R., female, white, aged 3 years. This was a case of complete extroversion not differing from cases 1 or 2 except that there was more protrusion of the posterior bladder wall. There was no sign of the navel. The recti muscles and pubic bones were wide apart. There was the same irregularity in the position of the orifices of the ureters, that of the left side being so narrow that it admitted the ureteral catheter with some difficulty. Urine was collected from each ureter and was found normal in every particular. A Maydl's operation was decided upon and it was thought better to divide it into two stages. 1. Excision of the bladder with the exception of the ureteral orifices. 2. Transplantation of the ureters into the sigmoid.

First Operation.—This was performed on April 16, 1903. It was tedious and bloody; but the patient rallied from it satisfactorily. The peritoneal cavity was not opened. The ureters were

dissected out of their beds for about one inch and a half, and the ends sutured to the margin of the hymen. The patient rallied well. The raw surface granulated in a clean manner. *Second Operation.*—This was performed on May 1st. The ureters were liberated and it was found that a small portion of the trigone



uniting the two ureters had sloughed. The mucous membrane surrounding the orifices was intact. The ureters were then separated from one another and catheterized, the catheters being fastened in by temporary ligatures. The peritoneal cavity was now opened in the median line and the sigmoid flexure brought out by the abdominal wound. It was long and easily manipulated. Two

quadrilateral flaps consisting of the serous and muscular coats were now reflected from the convex surface of the sigmoid flexure. The hinges of the flaps were on the lateral aspects of the gut and the meeting point was the middle of the anterior muscular band. A small opening was made in the mucous membrane at the lower end of the denuded area. The catheters were now withdrawn from the ureters and a stitch placed through the contiguous sides and knotted to hold them in contact, care being taken not to enter the lumen. A silk thread armed with a needle at each end was now taken. One needle was passed through a portion of the wall of each ureter avoiding the lumen. Then each needle was passed through the opening in the mucous membrane of the gut and made to penetrate the intestinal wall from within outwards, a little distance apart, emerging on the peritoneal coat of the bowel about one inch below the opening. Both ends of the thread were dragged on and the ureters pulled through the opening until the ends lay in contact with the bowel at the point of the penetrating threads. Then with fine silk the edge of the opening in the gut was united to the sides of the ureters. For this purpose very fine curved cleft palate needles (Lane's pattern) were used. The muscular flaps were then sutured together carefully over the ureters; care being taken to apply the upper border of the flaps around the entering ureters. Lastly a piece of omentum was carefully sutured over the whole wound area. The controlling loop of silk was then withdrawn through the gut wall.

During the operation the uterus and appendages were examined. They were very rudimentary and did not require interference to enable us to procure a sufficient length of ureter. But as the ureters had to be drawn over the top of the broad ligament, and as it was advisable to let their ends point downwards towards the anus, they were made to describe almost a circle. The abdominal incision was closed completely with silkworm gut sutures.

The operation was tedious, taking about one hour and a half. Shock was profound, and for forty-eight hours it hardly seemed possible for the child to recover. No evacuations from the rectum

were seen until the day after the operation (almost twenty-four hours), when, in response to an enema, a copious discharge with a urinous odor was obtained. This gave the test for urea. From this time urine was passed constantly, and although the child was much collapsed and extremely weak for five or six days she showed no further bad symptoms. A chart of the urinary evacuations for the first two days is interesting: May 2d, 9:50 a. m., urine voided for first time, also at 11:50 a. m., 2, 4, 7, 9, 10:40 p. m.; May 3d at 12 m., 3, 6, 10, a. m. and 1:30, 6 and 9 p. m. From this time on the intervals gradually increased until the average was about four hours a day, and from six to eight hours at night.

The patient was brought to me for inspection at the beginning of April, 1904, and I found the physical condition excellent. There was a slight degree of ulceration around the edges of the original bladder boundary. The cicatrix which had been grafted by Thiersch's method still protruded on exertion and had to be supported by an abdominal binder. The mother informed me that under ordinary conditions the child could retain the urine in the rectum for four hours during the day and nine hours when alseep at night. I obtained a specimen of almost pure urine from the bowel (about twelve ounces from this particular evacuation). *Color* light amber. Turbid. Putrid odor. *Reaction* alkaline. Sp. G. 1008. Urea 1.2 per cent. *Albumin;* some by nitric acid, and by acetic acid and boiling. No *sugar* by Fehling's. Fair amount of indican. Sediment: much, heavy, stringy. *Microscopic.* Many pus and epithelial cells. Many bacilli and some cocci. Much mucus. Some triple phosphates. No renal elements identified. (*Note.*—So much mucus was present that renal elements may have been obscured, but careful search failed to find them.) From this analysis it would not appear that there is any suppurative pyelitis present in the case. The albumen could be accounted for by the fecal contamination.

The latest statistics on the operation I have been able to obtain is given in a paper by Orloff (Khirngia, November, 1901. Abstract New York Medical Journal, March 15, 1902). He analyses fifty-

six cases. Immediate mortality is 18 per cent. Later on six out of fifty-nine patients died of complications. Pyelo-nephritis occurred in three cases and fistula in nine. Peritonitis in five cases. The abstract is too meager to make much out of it, and I have not been able to obtain the original.

DISCUSSION.

DR. WILLIAM KEILLER, Galveston: I would like to ask a question. I understand that the doctor left a considerable amount of the ureter free within the bowel. I want to know how much he left, and what he thinks happened to it.

DR. BACON SAUNDERS, Fort Worth: I must say that I have never had a case of exstrophy of the bladder, and have never had a case for the treatment of which I gave any consideration to this operation. I think this quite fortunate for myself—perhaps more so for the patient. The doctor is to be congratulated upon the work which he has done, and upon the excellent manner in which he has presented this case.

DR. THOMPSON, closing: In answer to Dr. Keiller's question concerning the amount of the ureter left in the rectum, will state that it was about three quarters of an inch. As to what became of it I can not say. The idea is, of course, that it is very much better to leave a length of the ureter in the rectum, that there may be less danger of contamination. Peterson, in his experiments on dogs, did not leave any length in the rectum. He simply places the edge of the ureter into the bowel. My own idea was that I would have the orifice of the ureter as far away from the margin of the bowel as possible. I think that these cases are much more common than would be suspected from Dr. Saunders' experience.

TRAUMATIC LUMBAGO (TRAUMATIC DORSALIS).

S. C. RED, M. D., HOUSTON.

On behalf of claimants and insurance companies, we are from time to time called upon, as surgeons, to state the character and duration of the injuries received by policy holders and others. In view of this fact, I have chosen traumatic lumbago as one of the many injuries that engage our attention. It is a subject not extensively treated of in our text-books, but one that, under the above conditions, presents some difficulties; for we do not desire to underestimate the period of disability for the claimants nor yet be the unwilling means of having the corporations imposed upon.

Definition.—Traumatic lumbago is a pain in the back as a result of an injury arising from external or internal violence; i. e., from a blow, crush, or wrench applied from some other point of the body. It does not involve or contemplate a fracture of any of the bones, although such a condition might exist, or has existed. The condition is not confined to the lumbar region, as its name would imply, but embraces the entire back, pleurodynia and torticollis included. Traumatic dorsalis would be a better name for it.

Etiology.—Functional disturbance of the nerves, partial or complete severance of a nerve or nerves of the back as a result of injury, represents the cause of the affection.

Pathology.—In cases of functional disturbance, there is no known pathology. Where the nerve is torn or lacerated, the neuritis thereby set up would be the same as described in any text-book on the subject, viz.: a degeneration affecting the entire distal distribution of the nerve fiber and a short distance up the central end from the point of injury. Degeneration is complete in about two weeks, when regeneration sets in, varying in duration from two months to, in long distal fibers, as much as eighteen months, according to the length of fiber, vitality, and age of the patient.

Where the ends of the nerve remain in contact, regeneration takes place sooner. Where the nerves are small; i. e., nerve filaments, the collateral nerve supply is established in a few days, say within a week, and the tissues resume their functions, or it may be the collateral nerve supply is sufficient to continue functions uninterruptedly.

Symptoms.—Where the nerve is not injured, but temporarily affected by pressure or stretching, a numbness and tingling sets in accompanied by some loss of muscular function. This condition disappears in from a few minutes to a few days at most. Where the force, however, is sufficiently great to cause an exudate of the myelin membrane at the Ranvier nodes, even though no discoverable damage occurs to the protecting memberane of Schwann or axon, a neuritis may be set up leading to a degeneration of the fibers. An injury so slight as this on up to a complete severance of the nerve gives rise (according to the degree of injury) to pain, uninterrupted in character, always aggravated upon motion, with soreness and tenderness upon pressure. On account of the pain and soreness the subject holds the muscles rigid, if possible, and avoids all unnecessary movements of the body. Witness the rigid neck in torticollis, the stooping shoulders in pleurodynia, the bent hips in lumbar pain. As absolute quiet is almost impossible for the muscles of the back, pain is almost constant. No fever accompanies this affection except where infection takes place.

Diagnosis.—1. Rheumatism is the one affection most likely to be confounded with traumatic lumbago, and in some instances without a reliable history and repeated observations a diagnosis can not be made. Rheumatism may affect one muscle or bundle of muscles, one vertebral articulation or closely associated articulations. In fact, it may present all the symptoms of a traumatic lumbago, and, if coming on while lifting or shortly after severe muscular exertion, it may defy distinction. Any one with experience can recall such cases, and it is in just such that a diagnosis should be withheld. Rheumatism may also complicate traumatic lumbago. The sudden change from active to inactive life is a

condition best suited to develop rheumatism. Rheumatism, i. e., muscular, is due, as claimed by some, to retention of the xanthin bases (products of tissue degeneration) in the system. Lack of accustomed exercise retards their elimination, and by this means we have one disease similar in symptoms complicating and prolonging another. A great difficulty arises in determining just how much disability is due to either one of the affections.

2. La grippe often causes severe pains in the back, and, unless accompanied by pronounced catarrhal and thermal symptoms, it may be confounded with lumbago. Pleurodynia affecting the fifth and sixth intercostal spaces ought always to create suspicion, as this is a favorite locality for grippe neuritis (a neuritis that sometimes lasts for months). The neuritis from grippe frequently does not set in until probably two or three weeks after the acute symptoms, and it is readily apparent how one might confuse a grippe neuritis with a traumatic lumbago. Without a satisfactory history, the case sometimes defies solution.

3. Engineers are proverbial for lumbar pains. Their seat in the cab is an uneasy one. The constant swaying of the engine necessitates an unending balancing of the body. Constant adjustments of this kind by cumulation of impressions tire out the nerve centers and make their further function painful. The tire, of course, is not felt in the brain but the back. In such a subject the adjustment of how much is due to occupation and how much to traumatism is well-nigh insurmountable. At best it is but a rude guess.

4. Other acute febrile affections ought to give no trouble since the lumbar pains accompanying them ordinarily pass away with the cause.

5. Acute and chronic diseases of genito-urinary apparatus and rectum give rise to lumbar pains, and should be eliminated in every case. Syphilis is a fruitful source of pain in the back, and should be looked for and its influence determined.

6. The intermittent character of neuralgic and periodic char-

acter of malarial pains in the back are sufficiently distinctive so as to make a diagnosis plain.

7. Neoplasms affecting the nerve tissue itself, or pressing upon it, give rise to dorsal pains, such as neuromas, malignant and benign growths affecting the viscera, osteomalacia, osseous tuberculosis, etc.

8. Psychic impressions may continue the consciousness of pain after its physiologic disappearance. No especially long nerves supply the back, and, consequently, physiologic recovery would take place within a definite period. This definite period, however, assumes that no callous or splinter of bone is pressing upon the regenerated nerve. Even should such a condition prevail, nature usually rounds off broken bones and ultimately removes callous within a period of from one to five years.

Complications.—Owing to the pain and discomfort in urinating, patients will with or without morphine retain their urine, sometimes until it leaks from an over-distended bladder. For similar reasons, the bowels are constipated. The sphincters, however, in both cases are unimpaired. Neurasthenia (i. e., railroad spine) of a more or less aggravated type is associated sometimes and very much retards the recovery of traumatic lumbago. The picture of neurasthenia, with its voluble narrative, exaggerated reflexes, vascillating purposes, rapid pulse, disturbed digestion, weak vision, weak muscles, shifting pains, and shifting spots of hyperesthesia ought not to trouble the diagnosis even if it does complicate the treatment. Neurasthenia, however, has as one of its cardinal symptoms pain in the back, and the painful spot is painful upon pressure. Repeated examinations will, however, enable you to determine the shifting point of pain, and thus make the diagnosis clear.

Malingerers are not apt to claim only pain in the back. If they do, however, it will be hard to deny, when the pain is slight. The main points to remember in detecting them are: a fixed spot painful upon pressure, the attitude of the patient (slightly bent

forward or to one side), the acceleration of the pulse upon pressure over the painful spot, when present (Mannkopf's sign).

Prognosis.—When the traumatism is confined to the erector spinæ muscles, the prognosis is favorable within from one week to six months, according to the severity of the injury. Ordinarily the trouble will last from one to two months. There are no large nerve trunks to be affected here and the damage done is chiefly near the muscular end plaques, consequently regeneration takes place quickly. The same rule applies concerning the muscles about the dorsal and cervical regions. If the articulating facets and ligaments are the seat of injury, a longer period of time will occur owing to the greater mobility of the parts. Here the period will range from three months to fifteen; the average period being six months. Should the case be complicated by neurasthenia, grippe, or rheumatism, the period of disability is rendered more doubtful, i. e., the subject will have some pains in the back as long as the neurasthenia, grippe, or rheumatism lasts. In these cases, however, the traumatic lumbago should be, from my point of view, limited to the usual period, and let the accompanying diseases account for the continued disability.

The period of disability and period of consciousness of pain or uneasiness are not coextensive. The period of disability in the ordinary case ought not to exceed a month, and in aggravated cases nine months. It is not incompatible with the performance of full duty to occasionally feel some uneasiness at the seat of injury. A rheumatic subject may feel twinges in the affected tissue for some months. A condition that simple rheumatic subjects would never think of being sufficient to cause cessation of duty. In other words, from my point of view, the period of time from date of injury to absolute cessation of pain of any kind as a result of it is not the period of disability, but is a physiologic period only.

Treatment.—Hot applications, and, in long continued cases, the actual cautery are beneficial. Rest in bed and oxide of zinc adhesive plasters give great relief. After two weeks the application of electricity should be begun and kept up. Internally bromides,

chloral, and ergot combined seem to give the desired relief. In those of rheumatic tendency, give salophen and phenacetin or some of the other coal tar derivatives.

DISCUSSION.

DR. S. BURG, San Antonio: In regard to Dr. Red's paper, I can state that I enjoyed it very much, as the doctor has ably covered the ground. I only want to mention a few points in regard to the treatment. I have often used deep muscular injections of clear water, by means of a large hypodermic syringe with a pretty long needle, and have found this treatment useful, not only in relieving pain and great suffering, but have also seen good permanent results from this treatment. I also resort in such cases to the use of pretty large blisters, applied to one or both sides of the lumbar region. I repeat them often in obstinate cases, and have seen good results. In longer lasting cases, and in chronic cases, the use of massage and electricity, especially the galvanic current, gives good results. In very obstinate cases, I have repeatedly used the actual cautery, and made some pretty deep and extensive burns, with good results. I remember one man who came to me repeatedly to be "burned," as he expressed it. It is now over a year since the last application of the cautery, and he still feels well. Whether or not in these cases it is the psychical effect, or the counter-irritant which causes the change to normal conditions, I can not say.

DR. SHROPSHIRE, Yoakum: As I understand the doctor, he proposes to apply electricity to a trauma of the spine after the expiration of two weeks, regardless of the amount of reaction then due to the trauma, which I can not subscribe to. Electricity is nothing more nor less than a stimulus applied to every particle of the tissue between the poles of the battery; and to recommend the unqualified stimulation of traumas of the spine at the expiration of two weeks would mean in many cases to add stimulation to over stimulated tissues, and would constitute a malpractice. The application of mechanical stimulation to injured tissues is only advisable where the process of repair has become sluggish, or where the products of inflammation are not being removed as fast as should be, and it would be the exception to find either to be the case so soon after an injury to the spine.

DR. EDWARD RANDALL, Galveston: The doctor has entered into the subject very thoroughly, yet there is one point that occurs to me in my work, and that relates to the differential diagnosis between this condition and renal calculi. I have often had cases come into my office for treatment

for supposed lumbago, and have been surprised, after the ordinary treatment, to find that they had passed calculi. I think it would be well for us to bear this point in mind. It is sometimes difficult to differentiate between lumbago and calculus without a careful microscopical examination of the urine.

DR. R. T. MORRIS, Houston: I wish to ask the doctor if he finds that there is any noticeable difference in the duration of these cases when they are not prospective damage cases. To my mind, a case of traumatic lumbago ought not to extend over a period of two or three months. We have doubtless all seen cases extending over a considerably longer period, and we frequently find that these cases have a damage suit in prospect. I think we might ask to be enlightened on these cases. What is the duration of these cases, especially from a psychical standpoint? In my experience in some of these cases, I believe that the pathological lesion has disappeared, and the direct effects from the trauma have disappeared, and the condition remaining is one that is purely psychical. As soon as the damage case is settled, the traumatic lumbago fades away. I have one case in mind where there never was a sign, external or internal, of a pathological lesion. The symptoms were purely subjective, excepting, perhaps, a slight increased reflex condition. But this patient was confined to bed, a helpless invalid. This should properly be pronounced a case of neurosis. In these cases, I think we ought to all know where the pathological ends and the psychological begins.

DR. M. SMITH, Sulphur Springs: Dr. Red's paper was a very learned and able production, and I certainly enjoyed it very much. A paper from practical experience is worth a great deal more to me than one of theoretical experience. He has covered the ground thoroughly, and I have no suggestions. We all meet these cases, especially those of us who handle any railroad cases. Another class of cases that we get a great many of are people who are carrying accident insurance. This is getting very monotonous. In regard to electric treatment, I do not think that the gentlemen understood Dr. Red correctly. I do not think Dr. Red would attempt to use electricity on a patient until the patient was ready to receive it. He would not do it until electricity was indicated.

DR. RED, closing: I wish to thank you, gentlemen, for your interest in my paper. In reference to the treatment suggested by Dr. Burg, it has already occurred to me that this use of pure water might destroy the power of sensibility. The remarks as made by Dr. Shropshire are irrelevant. The doctor stated that he would not apply electricity where an injury to the spinal cord had occurred. My paper did not contemplate an injury to the spinal cord. My paper refers to traumatism of the back. In regard

to applying electricity, that portion of Dr. Shropshire's remarks would not apply. I stated, however, in regard to applying electricity, that it should be applied after the lapse of two weeks. Why? Because the process of degeneration is complete after the lapse of two weeks. Then the process of regeneration sets up. If the ends of the nerves are in juxtaposition, it will occur at once. Dr. Randall mentioned that renal calculi were often confounded with lumbago. I am glad the doctor mentioned this point. The whole field was too great for me to cover in my paper. The object of my paper was to get some physiological basis for estimating the length of time that these conditions exist, and to enable us to have a sound basis upon which to give an opinion upon the period of disability. This depends upon the period of regeneration, according to our text-books. The process of regeneration, even in the long nerve fibers, terminates at the expiration of sixteen to eighteen months, but there are no long nerve fibers in the back to be regenerated, so the work goes on more quickly. If the injury is near the end of the nerve, the damage is so slight as to be hardly worth taking into consideration.

INTESTINAL ANASTOMOSIS BY A NEW AND SIMPLE METHOD.—REPORT OF CASE.

A. C. SCOTT, M. D., TEMPLE.

Notwithstanding the wonderful results which have been obtained in intestinal surgery since the advent of the Murphy button and a host of other mechanical aids to intestinal anastomosis and allied operations, one who reads much surgical literature must be impressed with the fact that a large number of surgeons, after numerous trials, scoring both success and failure, have returned to the old, but more or less difficult, method of suturing all wounds by the Lembert or Czerny-Lembert suture without mechanical aid. The most apparent reasons for this are that the mechanical aids are either too complicated, too uncertain, too limited in their application, or require too much time. An additional reason is to be found in the very excellent results obtained by the Lembert suture, its chief advantage being the difficulty of infolding the edges of the wound and holding them in accurate apposition while the suture is being applied, thus consuming too much time. While time is an important element in all abdominal operations, it does not seem to have deterred many of the best surgeons from returning to the simple suture, and we find that such surgeons as Mayo Robinson of Leeds, England, Tuffier of Paris, and Frederick Treves of London have abandoned the Murphy button and most other mechanical aids almost altogether. It is my impression that Robinson has done more successful gastro-enterostomies than any living surgeon, and we find further that Nicholas Senn, who originated and for a long time advocated the use of decalcified bone plates, makes in his new text-book the general prediction that "suturing will be the most common practice of the future."

Some remarks of Treves upon the Murphy button and intestinal suture are highly interesting, and we quote him freely. He says:

"In discussing this question, operations on the stomach may well be included with those on the intestines. What holds good with regard to end-to-end union or lateral anastomosis of intestines applies equally to gastro-jejunostomy, etc. *The chief point to be considered is whether Murphy's button or a double row of sutures should be employed.* No other mechanical appliance than the button has proven really effective.

"It was thought at one time that the use of Murphy's button, with its very conspicuous advantage of rapidity in operating, would supplant simple suturing. Most surgeons have, however, after trial of the button, returned to the use of direct suture. Resection of gangrenous gut in hernia operations affords a fair test of the relative merits of the two methods. In a paper in the Clinical Society Transactions for 1900, page 71, Jonathan Hucheson, Jr., has shown that the percentage of the recoveries is considerably higher after suturing than after the use of Murphy's button. Out of fourteen such cases treated with Murphy's button, only one recovered (i. e., 7 per cent). Mr. Kendal Franks (Medico-Chirurgical Transactions, 1893) collected a series of cases treated by suturing alone after resection, with a familiar percentage of recoveries (rather under 50 per cent).

"In the allied operation of gastro-jejunostomy, statistics show a similar advantage of direct suture over the use of Murphy's button, though not in the same proportion as in resection of intestine.

"Moreover, in practiced hands, the somewhat longer time taken by suturing does not appear to have the injurious effect attributed to it. There is a disadvantage in leaving a heavy metal body in the intestine or stomach, and accidents have occasionally happened from this cause alone. The retained button has caused ulceration, and has had to be removed by operation. The opening made by the button is very apt to contract. This is shown in certain specimens I have deposited in the Royal College of Surgeons Museum. Still, when it is *all important* to finish the operation quickly, Murphy's button affords the best means of doing so.

"Maunsell's method by invagination can not be strongly recom-

mended; it involves two wounds of the intestine, and is often more difficult than the description leads one to suppose."

He says further: "Lembert's suture has stood the test of time, and it may be safely said of it that it is, on the whole, the best form of suture with which we are acquainted. Its extreme simplicity, the rapidity with which each stitch can be inserted, and its undoubted safety and efficiency are points in its favor which all operators have recognized."

The time of this Association will not permit of full discussion of mechanical aids, but I can not be content to pass without brief reference to some of them, and to mention in particular the two which seem to be the best of their particular kind.

Mechanical aids are of two general kinds: (1) Those that hold or assist in holding the intestine in position while union is taking place, and then become digested or detached and pass on down the intestinal track. Under this class comes the Murphy button, Franks' decalcified bone coupler, McGrew's elastic ligature, and various rings made of catgut, vegetable substances, leather, etc.; (2) those aids which are designed to hold the intestine in a convenient position while the cut edges are sutured and are then removed. The most noteworthy of these are the forceps of Laplace, Harris' instrument, Halstead's collapsable rubber bag, and Mayo Robinson's bone bobbin.

Owing to the ease and rapidity with which the Murphy button can be applied, it has enjoyed first place among mechanical aids of its class, but the uncertain and distressing period of waiting for its exit from the canal and the not infrequent fatal results directly attributable to it after apparent recovery has taken place will perhaps eventually restrict its use very much. Upon a former occasion, when reading a paper similar to this before the Brazos Valley Medical Association, I presented the female side of a Murphy button and a loose spring which were handed me by a patient on whom gastro-enterostomy had been done *six months* before its passage. Its exit was preceded several days by severe pain in the right iliac region, which was enough to drive the patient frantic, and yet he

is living with the ever-present thought of having to submit to an operation for removal of the missing half of the button.

In the second group of mechanical aids, viz.: those designed only to hold the intestines or stomach walls in position while sutures are being applied, the ingenious forceps of Laplace are most worthy of mention. It once appeared to be an ideal instrument for this sort of work, but in Abbe's lateral anastomosis of the intestines, which is far less likely to result in stricture and obstruction than end-to-end anastomosis, it is no use whatever in closing the ends of the severed gut; aside from this, it is complicated, necessitates several sizes, and is rather too expensive to be possessed by many surgeons who seldom have occasion to make operations of this kind. The large diaphram resulting from its use is a serious objection.

Soon after a most extensive operation, some years ago, in which a Murphy button was used, and would have been a failure had it not been surrounded by a row of Lembert sutures, it occurred to the writer that a removable instrument so constructed as to grasp the edges of the gut and invert them, retaining them in close contact while Lembert sutures were applied, would be an ideal step toward perfection in intestinal surgery. Some experiments were then made upon intestines secured from the slaughter pen by using Kocher's artery forceps. While in London during the summer of 1901, this idea was perfected by having two pairs of forceps made as described below, and since returning they have been found to work admirably, being of material assistance in any operation in which the Lembert suture is applicable. This applies not alone to anastomosis operations, but as well to the closing of large wounds or incisions of the stomach, intestines, gall and urinary bladder.

The instruments and method of the writer are much more easy of application than of description. Two pairs of forceps with narrow blades about two inches long, each having one serrated edge, one right and one left, for convenience are angular bent near the lock and made with scissor handles provided with catch. The cut edge of the gut to be sutured is grasped with forceps, having serrations corresponding to it, while the forcep is held in an inverted

position. In other words, the right forcep is the one having the teeth on the right side when held in an inverted position. This forcep is made to grasp the edge of the gut on the operator's right. When the edge of the opposing gut is similarly grasped by the left forcep, each forcep is rotated toward the other, describing a half circle. This motion inverts the edges of each gut, and now, by placing the two forceps together, the peritoneal surfaces are brought in direct contact, and, by holding both forceps with the left hand, the thumb resting on the top, the gut is held in accurate apposition, while the peritoneal surfaces are quickly sutured with a continuous Lembert suture followed by a second row if desired. The forceps are now released and placed further on, grasping the next section to be sutured and the suture may be continued without interruption, grasping new tissue, section by section, until the entire surfaces are united, save a small hole from which the forceps are withdrawn.

In the case of anastomosis of small intestines, the forceps are not disturbed more than once or twice. This, however, is of little importance, since the position of the forceps can be changed in considerably less than sixty seconds. When the wound is so near closed that there is room only for the exit of the forceps, the edges naturally fall together and may be held between the thumb and finger while the suture is completed.

The writer prefers to make the suture doubly secure against leakage by re-enforcing it with a second row of Lembert sutures, which is now easily and quickly applied. Fine braided silk, threaded through a cambric needle, is most desirable. When the element of time is not of extreme importance, the lateral anastomosis of Abbe is preferable for the small intestines. However, end-to-end anastomosis by suture is quickly and easily done by this simple mechanical aid.

No surgeon should undertake to do intestinal surgery until he has practiced the Lembert suture enough on the cadaver to be able to close a wound of the intestinal canal with such accuracy that it will not leak when tested by water or air pressure from within.

When he has accomplished this, he can, with the assistance of the forceps above described, quickly and safely unite by suture any part of the alimentary canal from the diaphragm to a point considerably below the brim of the pelvis.

For the writer's intestinal forceps and the Lembert suture, the following advantages are claimed: (1) Simplicity; (2) perfect inversion of edges, and absolute control of the tissues to be united; (3) the tissues can be held by one hand of the operator while being sutured without assistance if necessary; (4) by grasping the intestinal edges close to the border with the serrated edge of the forceps, a minimum amount of diaphragm formation is secured; (5) success is not dependent upon a slough; (6) no danger from any foreign substance left in the lumen of the gut; (7) rapidity and accuracy with which intestinal suture may be accomplished by any surgeon of moderate skill; (8) with properly placed sutures there is no danger of leakage; (9) they are highly useful in Abbe's lateral anastomosis of the intestines, which is an ideal method in nearly all intestinal cases where a few minutes' additional time is not of extreme importance; (10) their *universal* application to operations upon the stomach, small intestines, colon, gall and urinary bladder.

The use of my instruments is illustrated by the following case:

N. J. N., married woman, age 46, Norwegian, came to Temple November 17, 1902, diagnosis of pyloric stenosis with dilatation of the stomach having been made during the previous week by my friend Dr. J. W. McLaughlin of Galveston. The patient gave a history of having suffered very greatly from some trouble which was manifested by dyspeptic symptoms, frequent vomiting and pain, beginning about twelve years ago and having then lasted with more or less severity for a period of nearly three years. Evidence obtained upon physical examination corroborated the diagnosis of Dr. McLaughlin. The patient was extremely emaciated and weighed only about eighty-five pounds. During the six months prior to her admission into the hospital she had suffered intensely at frequent intervals from attacks of vomiting, accompanied by

pain and a great deal of gaseous distention of the stomach. These attacks had become so frequent that the patient appeared to be gradually starving to death. The patient was prepared for operation within a few days after admission into the hospital. An hour prior to the operation the stomach was well irrigated with solution of P., D. & Co.'s acetozone. By an incision four inches long in the median line, the stomach was soon exposed and inverted upon the epigastrium. An incision about three inches long was made in the posterior side of the stomach, through which the pylorous was readily examined with the index finger. The pylorous was found to be surrounded by a great deal of firm cicatrical tissue, and appeared to be almost if not entirely closed. It was at once determined to make a posterior gastro-enterostomy; accordingly a loop of the jejunum nearest the duodenum was picked up and drawn out through the abdominal opening. It was inverted in such a way as to leave it in its normal position, when ready to be returned with the stomach into the abdomen. Having sutured the jejunum with a double row of sutures to one border of the incision in the stomach, an incision was now made in the jejunum corresponding in length with that in the stomach wall and located very near the line of double sutures. The free margin of the intestine was now grasped by a pair of the writer's forceps described above, the free edge of the stomach was similarly grasped by the other forceps, and after proper rotation the double row of sutures above referred to was continued from one end until the other end was reached. The exposed stomach and intestines were then rinsed with normal salt solution and carefully dried with sponges, after which they were returned to the abdomen and the incision was closed. The patient vomited freely during the first twenty-four hours and two or three times during the first three succeeding days. She was sustained wholly by nutrient enemata for about seven days, after which she was kept upon liquid diet for three or four days, and she was then permitted to eat beefsteak, toast, light bread, rice, eggs, etc. The patient was dismissed from the hospital December 18th, with request to report in thirty

days. At the end of that time she presented herself at the office and gave a most satisfactory history of having been able to eat and digest with perfect comfort most anything she might fancy, and, as evidence of proper digestion, she had gained fifteen pounds during the first thirty days. The writer has heard from the patient within the last few days, and is pleased to note that she is enjoying excellent health, with the exception of a little rheumatism, which has recently affected one or two of her joints.

DISCUSSION.

DR. W. R. BLAILOCK, Dallas: My friend Dr. Scott is very ingenious in devising instruments. I will not attempt to rehearse the large number of instruments that he has invented that I know of, but shall confine my remarks to this one. I believe that in both end-to-end and lateral anastomosis, simplicity should be the governing principle. While this instrument is very ingenious, I do not think it simplifies, but rather complicates, the operation. It seems to me that he has sacrificed the simplicity which modern surgery demands. Now, from the incision which you must make in this operation, it seems to me that you run great risk of infecting the peritoneal cavity. We know that all that is necessary is a couple of little stitches, and these stitches will hold the ends in position as nicely as these forceps could possibly do. Then precisely the same suturing that is accomplished with this instrument is done. I am sure that this operation can be done in a shorter time by means of the Connell suture, and with less pressing on the tissues than would be the case with these instruments. I think these instrument would be quite awkward to the average operator in attempting an end-to-end anastomosis. With this instrument, you can only take hold of a portion of the gut, and, after this is stitched, must remove the forceps and take hold of a new portion; and I am inclined to think that this complicates the operation, at the same time increasing the danger of infection. I dislike to differ with my good friend Dr. Scott, because I know him to be very ingenious, but I can not avoid the conclusion that he has deviated from the simplicity which is the ideal of modern surgery.

DR. M. SMITH, Sulphur Springs: I was very much interested in this paper. I think with Dr. Blailock that the instrument displays a great deal of ingeniousness. These forceps, I think, will add largely to the usefulness of intestinal surgery. I haven't done a great deal of intestinal surgery in the living human being, but I have done a great deal of that in my dog work. I have done the various forms of anastomosis on dogs, and I think

that that is the place to begin. In experiments with the Connell suture, four out of my first five dogs lived. The first dog I operated on died. Now a very important point, sometimes, is as to which can be most advantageously used by the average man, the Connell suture or the Murphy button? If I were in a hurry, I would use the Murphy button. If I had plenty of time, I would make an end-to-end anastomosis. I saw Murphy apply his button in Chicago. He removed fourteen inches of the ileum, and adjusted the guts with his button. He did the operation in a very short time. He extended to me the courtesy of seeing this case occasionally. On the fifteenth day he brought up the case, and she said, "Doctor, here is the button." The doctor said that he usually had to keep the patient under morphine, or something similar, until the button is passed. They had just given her a grain of morphine during the twenty-four hours preceding the passing of the button. In the Connell suture, you do not have this trouble.

DR. BACON SAUNDERS, Fort Worth: The whole question of method is one that you must study out and become expert in its use. When you become expert in the use of some method, you will get good results in its use, and these remarks are meant to apply also to end-to-end anastomosis.

DR. J. M. FRAZIER, Belton: I had the pleasure of seeing this operation. It is not only a beautiful theory, it is practical. It made a very fine impression upon my mind as being one of the very best methods of intestinal anastomosis. It is a very practicable instrument, in my opinion. The result demonstrates that it is a very successful thing in surgery.

TUMORS ON THE BREAST, WITH SPECIAL REFERENCE TO THEIR EARLY RECOGNITION AND TREATMENT.

M. SMITH, M. D., SULPHUR SPRINGS.

Adenomata are among the most common tumors of the breast. Pathologically they are hyperplasias of the glandular tissue proper, usually small, circumscribed, and freely movable with the breast, encapsulated, not adherent to the capsule, no inflammatory process connected with their development, no enlargement of axillary glands, no dilatation of veins in this region, and little or no pain. While adenoma of itself is benign, it has been known to develop into carcinoma, or at least excite carcinomatous and sarcomatous changes.

Fibroma may occur at any age; is rarer in the aged than in the young, occurring mostly in persons under 40, and occasionally under puberty (Wyeth). This being a form of connective tissue, hyperplasia may affect the whole organ, or may be confined to a circumscribed area. The tumor is hard and dense, freely movable with the gland, may or may not be painful. Shrinkage of the breast at times occurs as a result of cicatricial contraction of new formed tissue, and, when near the nipple, its retraction may resemble scirrhus (Wyeth). This form of tumor is slow of development without involving axillary glands.

Myxoma and enchondroma are rarely met with. I will take up for consideration the malignant class under two heads, viz.: carcinoma and sarcoma. The former is a tumor that develops from epithelial and glandular cells, destroys the normal type of the tissue in the region primarily affected, is characterized by an unlimited growth at its periphery and by the formation of metastases, chiefly by way of the lymph passages. It originates from the atypical

growth of epithelial cells, the latter forming the main part of tumor.

Sarcoma is a neoplasm which springs from connective tissue, and is formed in general after the type of embryonic tissue with abnormal and luxuriant cell formation originating in all varieties of connective tissue, fat tissue, etc. (Tilton).

The etiology of these growths still remains obscure; originating where they may, it is upon some portion of the body that suffers from constant friction and irritation. The mammary gland, composed of all the various tissues necessary for the development of any and all kinds of abnormal growths, is the source of almost constant irritation throughout life, especially from puberty until death, rendering it along with the cervix uteri the most frequent site of election for the propagation and development of malignant growths. Trauma is considered one of the most frequent causes of cancer of the breast. Eczema of the nipple or Padget's disease is a very important factor in the cause, not of skin epithelioma, as we would suppose, but carcinoma of the glandular structure itself. Inherited predisposition is considered by such authorities as Wyeth, Tilton, Treeves, and Senn as one of the greatest factors in the causation of both classes of malignant tumors of the breast.

While we can consider the cause of these two conditions together, we must bear in mind their distinctive differences in mode of metastasis. Carcinoma is conveyed by lymph channels almost exclusively, while sarcoma is conveyed by the blood channel, the latter being much more active and virulent, attacking the young preferably to the aged, while the various forms of carcinoma, namely, scirrhus, encephaloid, colloid, and epithelioma, prefer the aged, or those from 40 to 60 years. The frequency of occurrence in order named, and the upper and outer quadrant of breast, is, in nearly three cases out of four, the first invaded. The lymphatics run into axillary glands situated along the lower edge of pectoralis minor behind the pectoralis major, on the serratus magnus extending up towards the axillary vessels and close to the axillary veins, forming chains up to the clavicle involving the infra and supra

clavicular glands (Treeves). Sarcoma has for its favorite site the center and lower quadrant.

The diagnosis of the different forms of tumors of the breast is not always so easy. The age of the patient, family history, character of tumor, with or without involvement of the axillary glands, will aid us materially in diagnosis; the principal condition to differentiate will be an hyperplastic condition of the gland, which can be very satisfactorily done by pressing the gland against the chest with open palm; if an hyperplastic condition exists, it will be uniform and smooth, otherwise nodular or at least uneven. All rapidly developing tumors of the breast are malignant, and most often sarcomatous, nothwithstanding from 80 to 85 per cent of all malignant tumors of the breast are carcinomatous. Retracted nipple is characteristic of scirrhus. Pain is not essential to cancerous growths. They are, as a rule, not painful until some nerve or nerve filament has become involved or is encroached upon.

Prognosis.—Benign tumors of the breast can be cured permanently. The ratio of cures of the various forms of carcinomata and sarcomata is in direct proportion to the time diagnosis is made; early diagnosis gives the patient some assurance of a permanent cure; delayed diagnosis absolutely no hope of permanent cure. The average duration of life of patients suffering from carcinoma is from one to four years; sarcoma, much shorter. The last point, and the all-essential one, is the treatment, and I think resolves itself into two words, "radical operation," for any tumor of the breast where you are not absolutely sure by microscopical examination that the tumor is benign, if this can be unqualifiedly proven, then a removal of the tumor alone might suffice. Not being a microscopist myself, I prefer to be on the safe side; give my patient the benefit of the doubt. Remove the entire breast, portions of the pectoralis, major and minor axillary glands with the deep fascia that envelops them.

DISCUSSION.

DR. S. C. RED, Houston: If I were to compliment this paper as I would be entitled to do, it would look like a preconcerted arrangement between

us in view of the nice things which the doctor said about my paper. I was very much pleased to hear what he had to say about tumors of the breast. I was also pleased that we strongly agree in one particular, and that is that it is desirable to remove the whole breast. It is always best to be on the safe side and remove them in their entirety. I heartily endorse his position on that point. Although the claim has been made that the germ of cancer has been discovered, I am not sure that anyone has discovered its etiology. You are familiar with the present theories regarding cancer, and I will not rehearse them.

DR. A. C. SCOTT, Temple: I am like Dr. Red, I would have a right to say something nice about the paper. I am glad to know that the doctor takes such a decided stand upon the treatment of malignant growths of the breast; that is, radical operation—and he means radical operation. These operations have been more successful than any other operations that have ever been introduced for this purpose. Koper is a very radical man, and whatever he does is thoroughly done, and the same remarks will apply to Halstead. He told me that the treatment of malignant growths of the breast had reduced mortality to about 50 per cent. We rarely see a cancerous growth return after three years. I recall one, and only one, instance in which a malignant growth having failed to return during the three years did return very much longer after that. It was a growth in the abdomen, just above the umbilicus; it had been removed some twelve years previously. That is the only case I know of which had not returned at the end of the three years which did return later. In regard to the radical operation of Halstead, I have had some experience with it, and think that the time required is entirely too long.

DR. S. BURG, San Antonio: I think that the subject has been pretty well covered. I would like especially to call attention to tumors of the breast occuring during gestation. I have often been deceived by such tumors. In one case a lady presented herself for examination. She was nursing a baby of about eight months. The examination seemed to disclose a tumor of the breast. It was movable on palpation, and every symptom pointed to a benign tumor of the breast. I advised operation, thinking of the possibility of it assuming a malign character. The patient did not take my advice, but went to another physician, who advised that an operation would not be necessary, but ordered a plaster and the tumor disappeared. From this experience I have learned to be cautious in these cases. I think that sometimes when these conditions occur, especially upward, away from the nipple, they are caused by an inflammatory condition of a part of the gland, or by some accumulation of milk in the glands. There is really no tumor there, but we are easily deceived as to the nature

of the growth. I think in such cases it is necessary to be very cautious with advising of an operation. Just a few days ago I had occasion to see a case like that. A woman with a child six or eight weeks old came in with a tumor in her left breast. While it presented every symptom of a tumor, I advised her to wait a week longer, thinking that it might be one of these growths which would go away.

DR. SMITH, closing: In regard to the tumors during lactation, as mentioned by Dr. Burg, the great majority of them have been tumors, more on the order of a colloidal sac (galactocele), or a chronic inflammation of the mammary gland. I want to make this assertion: I do not care what the character of the tumor is, it ought to be taken out. It has no business there. The time is coming when the men of medicine of this country will realize that when they have a growth of this kind to deal with, and it remains after the lapse of sufficient time for an ordinary inflammation of the breast to subside, it would be removed, and the doctor is responsible for many deaths from neglected tumors of the breast. I was glad Dr. Scott mentioned the return of these tumors. I did not have time to go into the matter as thoroughly as I would like. I think that radical operation, which you all understand means the removal of the mammary glands with all pertaining to them, the muscles, etc., is the only rational procedure, and the time that the patient will live is proportional to the time that the operation is done, and the thoroughness with which it is done.

ANATOMY OF A CASE OF CYSTIC ADENOMA OF THE THYROID GLAND.

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So seldom do we have the opportunity of making a complete dissection of a marked case of goitre that the writer feels no need to apologize for presenting to the Association the anatomic details of the following case and illustrating them by a complete series of casts.

The casts were taken from the body of a seemingly full-blooded negress, aged 55, case 14,729, John Sealy Hospital, Galveston, Texas, said to have died of asthenia.

Cast I showing the external appearance of the tumor indicates the fat, well-developed character of the body. In the neck in the middle line and on either side of it, extending from the hyoid bone to the sternum is a tumor, which is so prominent on the right side as to rather obscure the evidence of swelling on the left. The sterno-mastoids are somewhat separated by the growth and overlap it at the sides. The tumor is globular and shows some indication of lobulation. Its right half is roughly 7 c.m. broad and 8 c.m. long in its greatest diameters, while the left half does not lend itself readily to measurement. The right half of the tumor overlaps the middle line.

On dissection the skin was found to be freely movable throughout, the platysma on each side somewhat hypertrophied and the two muscles interlaced with each other below the hyoid (i. e., lower than usual). The anterior jugular veins were perfectly normal and did not seem to be enlarged. On reflecting the platysma the superficial layer of the fascia lata presented no peculiarity. It had the usual attachment to the hyoid bone, enclosed the sterno-mastoid on either side and split inferiorly as usual into two layers attached

to the anterior and posterior lips of the upper border of the sternum, and between the layers was the usual vein uniting the two anterior jugulars.

Cast II shows the deep fascia reflected to expose the first layer of infra-hyoid muscles and sterno-mastoids. The right sterno-hyoid which covers the larger right lobe of the tumor is very much hypertrophied, especially in its breadth, the muscle measuring 5.5 c.m. across at its broadest (about midway between the hyoid and sternum) and narrowing at either end. It is just about twice the size of the normal muscle. Both omo-hyoids are markedly hypertrophied, the left sterno-hyoid not so, but here I may be in error, as the left half of the tumor was exposed in embalming the body and the coverings damaged. The tumor is seen to dip beneath the sterno-mastoid on either side. No large vessels are apparent. Between this layer of infra-hyoid muscles is a distinct layer of fascia stretching between and splitting to enclose them. It is the normal layer of fascia which unites these muscles and can scarcely be said to be hypertrophied. Thus we have in it a second layer of deep fascia over the tumor.

In cast III the sterno-hyoids and omo-hyoids have been reflected, and their fascia removed with them. In this cast the fascia uniting these muscles is not shown. The anterior edge of each sterno-mastoid has been deeply incised and the muscle partly drawn aside. The tumor is now found to be enveloped in a third distinct, and, in this case, somewhat hypertrophied layer of fascia, into which the sterno-thyroid muscles are inserted. These muscles are much hypertrophied, being each 5 c.m. broad at their sternal attachment. Each muscle extends as a muscular belly for about 4 c.m. upward from the sternum, and is then lost in the fascia. There is no trace of an attachment of muscle or fascia to the thyroid cartilage, the fascia seems to have been stripped off the thyroid cartilage and retains its attachment only to the hyoid bone. No large vessels are yet to be seen except at each upper and outer angle of the tumor where the superior thyroid vessels can be made out enveloped in fascia. The fascia laterally blends with the sheath of the sterno-

mastoids. On the right lateral surface of the right lobe of the tumor a deep groove divides it into two masses. In the upper end of the groove a small portion of the upper end of the right sterno-thyroid muscle will be found (see cast V).

In cast IV the sterno-thyroid muscles and the fascia belonging to them, which was found to form a complete anterior investment for the tumor, have been reflected and the proper capsule of the goitre has been exposed. The sternum has been cut longitudinally and the superior mediastinum opened the better to investigate the lower relations of the tumor. For the first time important vessels are encountered and the tumor, freed from its compressing investments, seems larger than in any previous stage of the dissection. The tumor is now seen to consist of a right and a left half, each further subdivided, and all enveloped in the same capsule. The right half of the tumor presents a posterior portion, elongated and shaped like an enlarged lateral lobe of the thyroid. This portion appears to be free from cysts and looks like simple adenomatous tissue (simple hyperthrophy). All the rest of the right half and the whole of the left half of the tumor are markedly cystic, the globular prominences of the undivided cysts being very numerous. The whole surface of the tumor is covered by a dense network of large veins, whose size can not rightly be estimated in their empty condition. They are imbedded in and almost inseparable from the capsule, and the model only gives a faint idea of the larger vessels. The internal jugular veins are pushed outward by the tumor mass, and each vein is as it were anchored to the capsule by three large branches, a superior thyroid vein at the upper angle of the mass (about the usual level of the vessel), and two middle thyroid veins, the lower of which is about at what should be the level of the cricoid cartilage, while the upper seems an accessory vein and lies at what should nearly correspond with the upper border of the thyroid cartilage. Rather deeply under cover of the sternum and springing from the inferior angles of each lateral lobe of the growth are two large inferior thyroid veins. These veins all anastomose freely over the surface of the growth and send great

branches in between its lobes. Excepting the main trunks they are thin walled and imbedded in the capsule. The trunks of these veins are enlarged, suggesting in size average median or ulnar veins as they appear at the elbow. Enveloped in the capsule of the tumor at each upper lateral angle is the only artery so far met with, namely, the superior thyroid. It is accompanied by the superior thyroid vein and is distinctly enlarged. Each superior thyroid artery sends a branch over the surface of the tumor, but passes mainly to its deep aspect. Its relations are practically normal and it is easily accessible to ligature. Coursing over each lateral surface of the tumor is the ansa hypoglossi which has been dissected out of the fibrous capsule belonging to the muscular layer.

In cast V the two halves of the tumor have been separated to show its deep relations. In incising the capsule along the line of division between the two halves of the tumor, many veins required double ligation before being cut. This done, the two portions were separated so as to get at the deeper vessels. The superior thyroid arteries with companion veins were divided between ligatures on the side of the thyroid cartilage, the inferior thyroid arteries were ligated on the sides of the trachea. The relations and dimensions of the isthmus thyroidei unfortunately could not be made out with certainty, as it had been damaged in embalming the body. I think it was comparatively small (probably 1 to 1.5 c.m. in diameter) and firmly adherent to the first two rings of the trachea, a large branch of each inferior thyroid artery being closely associated with it. The two segments of the goitre having been separated as in cast V, the trachea and larynx are exposed. The tumor being bilateral, there is no appreciable bending of the trachea, though there may be some slight narrowing. None of the rings are softened. A little separable cyst has remained attached to the front of the trachea in association with the right inferior thyroid vein; it is an accident of dissection and the cyst is not especially adherent. By fully retracting each half of the goitre, the carotid sheath is exposed on either side. The vessels have been markedly dis-

placed outward by the tumor. From under each carotid sheath, 2 to 3 c.m. above the level of the sternum, the trunk of each inferior thyroid artery is seen to emerge. Each artery divides into an ascending and a descending branch, the latter going one to each lower angle of the goitre and joining there the corresponding inferior thyroid vein; while each ascending branch enters its own lobe close to the isthmus. The ascending branch of each inferior thyroid artery, on the side of the trachea, is in close relation to the recurrent laryngeal nerve, a point of the utmost surgical importance. The dissection shows that the inferior thyroid arteries might be ligated without danger to the recurrent laryngeal nerves either where they enter the tumor at the antero-lateral borders of the trachea (and here there would be at least two large branches, an upper and a lower previously described, to be ligated for each inferior thyroid artery), or the trunk of each vessel might be safely ligated as it emerges from under the carotid sheath. The trunk of the sympathetic is not visible. Dissection shows that its close relationship to the carotid sheath in which it is imbedded has caused its displacement outward with the common carotid artery.

The superior thyroid artery and companion veins are easily accessible to ligature, as they course over the upper angles of the tumor. I could find no thyroidei ima artery. Further dissection shows two large inferior thyroid veins, one opening into each innominate. Their trunks would be easily accessible as the lower angle of each half of the growth is raised. The other veins are more accessible from the outer surface of the tumor, as shown in cast IV.

It will be seen that there is a distinct difference in character between the deep and superficial portions of the right half of the tumor, the superficial part being a congeries of cyst, the deeper seemingly simply adenomatous. The section, however, shows that the deep portion of the tumor is also markedly cystic in its lower segment. A small upper part of the right sterno-thyroid is seen attached to the thyroid cartilage and reflected upward. It was found occupying the angle between the deep and superficial parts

of the tumor superiorly and attached to the capsule formed from the fascia of the sterno-thyroid muscles (compare cast IV).

Figure — is a life-size drawing of the outer surface of the right lobe of the thyroid. The arrangement of one of the middle thyroid veins is well seen, as also of the superior and inferior thyroid veins. Also the difference in superficial appearance between the smooth posterior portion and markedly lobulated anterior portion of the growth.

Figure — shows that on section the difference is more apparent than real, the upper part of the posterior mass being the only portion free from cysts. The lower half of this portion of the tumor shows one large and many small cysts embedded in a groundwork of a simple adenomatous tissue; while the anterior part of the growth is one great mass of cysts with septa so thin as to be barely appreciable. All the vessels visible to the naked eye are in the capsule. The left half of the tumor differs from the right half in presenting in its upper three-fourths an enormous number of smaller cysts, varying in size as seen by the naked eye from 2 m.m. to 3 c.m. in diameter. All these are evidently compound, each larger cyst being composed of many smaller ones whose capsules are thinning out toward obliteration, the capsule of the layer cyst being thickened. The lower one-fourth of this lobe has some normal gland in which are many small cysts. There were no post-esophageal or mediastinal extensions of the tumor. Microscopically the growth is a cystic adenoma of the thyroid gland.

The main points to be remembered in removing non-malignant tumors of the thyroid body are: (a) The danger from hemorrhage, which is mainly venous, and constitutes one of the chief risks. (b) The danger to the inferior laryngeal nerve. (c) The danger of compression of the trachea or its collapse if its rings be softened. (d) The danger of a peculiar post-operative toxemia, probably from absorption of thyroid secretion which is, according to most operators, greatly increased by much pressure on the tumor during its removal. (e) The danger of myedema if the whole gland be removed. Bearing these points in mind, the dissections

in this case seem to me to teach the operator the following lessons:

Easy access is essential to safe and speedy removal, and with this in view I would use in this case a U incision, the upper limbs of the U beginning at the anterior border of each sterno-mastoid a little below the level of the angle of the jaw when the head is thrown back, and following the anterior border of each muscle, meeting about one inch above the sternum in the middle line. In this incision, skin and platisma should be cut, large branches which frequently unite the anterior jugulars with the external jugulars looked for under the platisma and divided between ligatures near the upper angles of the wound, the anterior jugulars themselves ligated farther down, and the vein joining them just above the sternum. The next incision in exactly the same lines should cut the omo-hyoids and sterno-hyoids as far from their hyoid attachments as will admit of picking up the lower ends and reuniting them at the end of the operation.

The next sweep of the knife will take in the sterno-thyroids and the sheet of fascia which stretches between these and thence to the sterno-mastoid over the tumor (see cast III). No large vessels should be encountered so far (except the anterior jugular veins and their connections). It might be possible with some to avoid the ansa hypoglossi supplying the hyoid depressors and thus preserve these muscles. They should be found descending obliquely to the hyoid depressors over the carotid sheath in the upper two inches of the incision on either side. With the view to save these nerves and also to avoid injury to the veins of the immediately underlying special capsule of the goitre, I would start with careful division of the muscular belly of the sterno-thyroid above the sternum and follow the fascia up cautiously on either side. This last incision should enable the operator to throw up a flap consisting of all the hyoid depressors and the fascia connecting them, which would fully expose the thyroid gland in its proper capsule. So far bleeding should have been easily controlled. The head should now be bent forward to relax any pressure on the veins which

course over the goitre, and its general relations can be thoroughly examined to determine the extent and method of removal.

Remembering the importance of avoiding pressure on the trachea, and in the light of the dissection before us (cast V), it would seem best to begin by dividing the veins and capsule between ligatures over the median dividing line between the right and left segments of the growth. No vein should be cut without being first ligatured, lest it retract within the capsule and be troublesome to catch again. Thus the two halves of the tumor could be separated, the trachea exposed, and the character and relations of the growth made out. In this case one would readily see the comparatively healthy character of the deep portion of the right half of the tumor, and the superficial cystic portion could be removed by ligature of the superior thyroid vessels at the upper and lower angle, of the upper branch of the inferior thyroid artery in front of the trachea near the isthmus of the inferior branch of the inferior thyroid artery and the inferior thyroid vein at the lower angle of the tumor well forward and out of the way of the recurrent laryngeal nerve. Turning the gland now to the inner side, cautious division of branches of the middle thyroid veins between ligatures would enable the operator to remove the superficial cystic portion of the growth. Nothing should be cut except between ligatures.

My uncertainty about the isthmus in this case does not enable me to argue from the dissection, but the experience of surgeons would suggest the division of the isthmus between ligatures as a step to be taken as soon as that part is fully exposed. The general cystic condition of the left lobe, taken together with the comparatively healthy character of the deep portion of the right lobe which we have resolved to preserve, should determine the complete removal of the left half of the goitre. The inferior thyroid vein is ready of access and should be first ligated and cut at the lower angle of the tumor. Rolling the tumor gently outward, the inferior thyroid artery will be readily and safely accessible as it emerges from under the carotid sheath, thus avoiding risk to the recurrent laryngeal nerve, which is close to the trachea. The

superior thyroid vessels can now be taken at the upper angle of the growth; and lastly, turning the mass toward the middle line, the middle thyroid veins will be ligated and divided as far as possible from the internal jugular. The cysts which our section reveals at the lower angle of the part we have resolved to leave need not trouble us, as experience teaches that they are likely to atrophy after operation. In closing the wound the depressors of the hyoid bone should be stitched together to preserve their function, and the danger attending the absorption of thyroid secretion, the risk of venous oozing, and the difficulty of complete obliteration of the post-operative cavity suggest the necessity of gauze drainage at the lower angle of the wound. Elevation of the lower end of the bed and avoidance of a pillow might lessen the risk of mediastinal infection.

AMPUTATION OF THE HIP JOINT, WITH REPORT OF SUCCESSFUL CASE.

J. W. MATHEWS, M. D., AUSTIN.

Primary amputation at the hip joint for severe injury of the thigh in gunshot wounds or others with great comminution of the femur is one of the most fatal operations in surgery. Amputation at the hip joint on account of gunshot injuries was performed twelve times during the Crimean war, and every case ended in death. Legoust has collected thirty cases of this amputation for gunshot injury, all of which terminated in death. Indeed, according to Erichson, up to the period of our Civil War, there was no authentic instance of recovery under these circumstances. The death rate in military practice from statistics not quite recent, after primary amputation at the hip joint, is 93 per cent. In civil practice, the mortality is estimated at 80 per cent. Primary amputation at the hip joint for disease of femur is a comparatively favorable operation, and only gives a mortality of 40 per cent. The lesson to be learned from these statistics is that, except in rare instances where for example the thigh is so completely crushed that its vitality is doubtful, or if the injury is at a point too high for a thigh amputation, or if the patient is threatened with instant death, primary amputation should not be done. Every effort should be made to tide the patient over the immediate results of the injury, postponing amputation if necessary as a secondary operation. Secondary hip joint amputations, though the mortality is still quite high, is a fairly successful operation. Reamputation after primary amputation through the thigh is a much less fatal procedure, and is attended with a smaller mortality than when the whole lower extremity is removed at once; the shock to the system being much less. Recent statistics in these amputations give much better results. Wyeth's method of controlling hemor-

rhage has made amputation at the hip joint a much safer operation than any other method, and has greatly lessened its mortality. Professor Wyeth in his recent work reports sixty-nine cases of amputation at the hip joint in which his method of controlling hemorrhage was employed, with a mortality of only 15 per cent, and as good results have been obtained by Dr. Estes of Bethlehem, Pa.

Report of Case.—J. B., age 45, a strong, healthy man on November 20, 1901; fell from a pecan tree, a distance of forty feet, striking hard, stony ground, sustaining a compound comminuted fracture of the upper third of left high. The upper fragment of femur protruded about three inches through the external wound. Dr. Wickline, the physician who saw the case at the time of the accident, while having the patient's pants removed found several large pieces of bone in one of the legs of the pants. He also extracted a number of loose pieces of bone from within the wound. He irrigated the wound with a solution of bichloride of mercury one to two thousand and made it as clean as possible. Bringing the broken ends of the femur into as good position as possible, he packed the wound with iodoform gauze and dressed it antiseptically. Over all he applied a plaster of Paris dressing. This plaster of Paris dressing was removed at the end of three weeks, when the doctor thought he had obtained a fair amount of union. In this he was mistaken, as the subsequent history shows. A plaster bandage was kept applied to thigh until March 14, 1902. At this date he was sent to the city and county hospital at Austin, Texas. I saw the patient a few days after he came to the hospital. He had a temperature of 102, and said he had had chills and fever for about six weeks. The wound was discharging large quantities of pus. The patient was very much reduced in flesh, and was rapidly losing ground. There was no union whatever, a large sequestrum of necrosed bone being impacted between upper and lower fragments of femur, making union impossible. Drs. Graves and Hamilton, who now have charge of the case, came to the conclusion that a high thigh amputation would give the patient his only chance for life. On March 18th, assisted by Dr. Graves, the city and

county physician, and Dr. Hamilton, the resident house surgeon, I attempted to perform a high thigh amputation. Lest the tourniquet should be in the way in making my flaps, I employed Wyeth's method of controlling hemorrhage in amputation at the hip joint. I made antero-posterior flaps. After I had made my flaps, I sawed off the end of upper fragment of femur, which was very much necrosed. Then I brought the flaps together to see if they covered the end of the femur without too much tension. I feared the flaps were rather short, so I began dissecting back the flaps higher up, and as I was doing so pus spurted out from the acetabulum, and it now became evident that amputation at the hip joint was our only alternative. There was only left about three inches of the upper end of femur, and as we could not make much use of this short piece of bone as a lever, it was a most difficult procedure to dislodge the head of the femur from the acetabulum. The muscles attached to the great tronchanter were cut off with strong scissors. In fact, the balance of the operation was completed with scissors. I learned this special use of scissors from Dr. Dawborn, the professor of surgical operations on the cadaver at the New York Polyclinic, and to this able and resourceful surgeon I am greatly indebted for many useful points in surgery. All present were amazed and delighted at the small amount of blood lost during the operation. Indeed, it was practically a bloodless operation, and the patient suffered almost no shock afterwards. It was remarkably easy to ligate all the arteries, almost as easy as on the cadaver, so thoroughly did Wyeth's method control the blood-vessels. The wound was dressed in the usual manner. The acetabulum was drained by a rubber tube. The tube was removed in forty-eight hours, and at no time after this was pus found in the wound. This large and extensive wound healed with wonderful rapidity. The patient left the hospital six weeks after the operation, the wound being perfectly healed. He is now in excellent health, making his living working on a farm. It affords me great pleasure to acknowledge my great indebtedness to Drs. Graves and Hamilton for their able and unselfish help throughout the operation.

THE MANAGEMENT OF CLUB FOOT.

R. W. KNOX, M. D., HOUSTON.

I will touch only on that form of club foot known as talipes equino-varus. This variey is ten times more frequent than all other forms combined, and for all practical purposes is the only form worthy of our consideration.

The difficulty of treatment stands in equal ratio to its frequency, or, in other words, the tendency to recur after any and all forms of operation has been noted by all observers. The literature of the subject is abundant but somewhat confusing. At one time we have the extensive cutting operation of the late lamented Phelps lauded as the only proper procedure. At another we have the bloodless method of Lorenz, who claims the greatest measure of success by manipulation alone. Various forms of mechanical appliances, including shoes, braces, straps, etc., give good results in the hands of the inventors, but utterly fail to win the same meed of praise from the profession at large.

Talipes equino-varus is most usually congenital, but may be acquired in early infancy by reason of a paralysis of certain of the dorsal flexor muscles of cerebral or spinal origin. It may be a sequel to a number of the diseases of early infancy. It is readily noticeable soon after birth. The foot has a twisted appearance with plantar surface abnormally concave, and looking inward and upward and backward, while the dorsum looks outward. The external malleolus is always prominent. These conditions are much exaggerated if the deformity is not corrected before the child begins to walk. Usually both feet are affected, and the gait of the child with toes turned in and knees together is very characteristic. The over balancing of the muscles becomes greater as the child grows older, until finally the child seems to walk on the end of ankle bone, and the foot is greatly distorted. At this stage it

does not seem possible that the foot could ever be brought in normal relation to its various structures and to the ankle bones. The astragalus is always outwardly displaced.

The question of treatment is determined by the age of the child, and the degree of the deformity. In young infants, to the age of five months, gentle manipulation alone is advisable by mother or nurse, and this may succeed in correcting the deformity in the milder cases, but it will never remain corrected unless held for a longer or shorter interval in a properly fitting shoe or brace. At the age of six months or older, two plans present themselves, and both have merit, viz.: that of cutting every resistent structure so that the foot can be placed in the position of over-correction, or the other method of placing the foot in this position by manipulation alone. The older method by straps and leather braces alone is slow and unsatisfactory and rarely effectual.

It was my good fortune to know intimately the late Dr. Phelps of New York, the advocate of the extensive use of the knife in these cases. His plan was to cut and keep cutting until the foot could be brought in its proper position. The foot was then enclosed in plaster in the corrected position, and the wounds allowed to heal. Some difficulties present themselves in this method:

1. It is difficult to get the consent of the parents to a cutting operation when there is any other plan by which it may be exchanged.

2. The foot is not as perfect anatomically or functionally with such extensive incisions and formation of scar tissue as when moulded into shape by the process of stretching of these structures.

3. There is always some danger of sepsis and imperfect healing after a cutting operation of this magnitude in some subjects, even with the most rigid precautions.

4. An interval of several weeks must elapse before the child can be allowed to walk.

In older subjects, when the plantar fascia and tendons are unduly contracted and rigid, the knife may be used as a last resort,

but it has seemed to me best to attempt first the more conservative operation in all cases.

The bloodless method is probably as old as surgery, but to Dr. Lorenz of Vienna is due the credit of bringing it into prominent notice, and systematizing the operation. The child's foot is largely composed of cartilagenous tissue, and submits to a degree of manipulation and stretching that at first impression would seem extremely hazardous to the integrity of the foot. No attempt should be made to correct the equinus until the varus is overcome. The latter consists of bringing the parts into proper relation by a forcible bending or untwisting of the foot. The first step is adduction over a padded wedge; second, elevating the outer border of the sole and depressing the inner by a twisting motion; and, third, dorsal flexion of the sole upon the front of the ankle.

The objections often presented to this method are the time and labor necessary to overcome the ligamental contraction, and the apparently brutal and dangerous force that must necessarily be used to bring the foot into a proper over-corrected position. In many cases the point is no doubt well taken, and the judgment of the surgeon must be his best guide in this matter. It is remarkable how much can be accomplished by manipulation alone, and how little harm results even after the most strenuous efforts of the surgeon. Most operators who adopt this method do not hesitate to cut the tendo-achilles, or even the posterior dorsal ligament, as these strictures will often be found the most unyielding, and no harm can possibly occur from such a section, and the future usefulness of the foot is not impaired. However, by whatever method the foot is straightened, it should be brought into a position of over-correction, and fixed in this position for several months. For this purpose the plaster bandage is the only efficient retaining splint.

It is well to bear in mind that, after this first dressing is removed, the treatment is only fairly well begun. In many cases of lax knee joint or weak ankle a well-fitting shoe and leg brace must of necessity be worn for six months or one year, or until all

tendency of over balancing of the muscles is overcome, and the bones have become accustomed to this new position. Even after the mechanical support has been discarded, the foot should be watched for any tendency to return to its former shape.

It has been my practice to renew the plaster dressing about once every four weeks for several months, and then use a well-fitting shoe and ankle brace. The latter is made of compressed paper, and can be purchased in sizes to fit each individual case. This of course can be removed daily and massage instituted.

The foot in walking will show no disposition to turn in the dressing, unless there has been a twist at the tibia or a turn of the leg at the knee. Where the tibial bone is twisted upon itself and turned in, an osteotomy may be necessary. If the leg only turns at the knee on account of lax ligamental structure, the long Taylor brace extending from the foot to the pelvis can be used with good advantage.

In my experience, the use of plaster as a fixed dressing and allowed to remain until the structures have become accustomed to their new position has no equal as a mechanical appliance in these cases. The development of the foot is not retarded by this enforced rest. If the child is able to walk, he may be allowed to do so by fitting a shoe over the plaster. This the child would not be able to do for some time if the cutting had been extensive. No bad results usually follow either operation, and, when the after-treatment is properly carried out, success is almost certainly assured. Constant vigilance on the part of the surgeon is the price of success. Unless the patient can be under his immediate charge for at least one year, a successful result is very doubtful.

SECTION ON PATHOLOGY.

1. Immunity.

   A. E. Thayer, M. D., Galveston.

2. The Consumption and Elimination of Water in Dry and Moist Climates, with Special Reference to the Cause of Bright's Disease.

   Wm. S. Carter, M. D., Galveston.

3. Methods for Preparing Specimens to be sent for Pathological Examination.

   M. C. Schaeffer, M. D., Galveston.

IMMUNITY.

A. E. THAYER, M. D., GALVESTON.

From the human standpoint, the term immunity relates to the development of various diseases, usually acute infections, and man's power of resisting them, but the subject is really far broader. The old idea that disease is caused by a hostile organism, living externally, and able to prey upon man, is now justified in the modern germ theory, but we recognize that the organism is of a low vegetable nature, not a demon, and that the proper methods of studying it are bacteriological and not theological. The entire question is but one phase of parasitism, and presents all degrees. We naturally ask, where is the normal habitat of the organisms outside of the body? and until this question is answered we must do without information of great value. The tubercle bacillus resembles forms which occur in hay and in the feces of the cow; tetanus bacilli are commonly found in garden earth which has been manured, but in the majority of cases our knowledge on this point is imperfect, and so also are our means of defense.

We recognize three forms of parasitic relation: A facultative, where the organism normally grows apart from the body and becomes parasitic by accident, of which the yeasts are an example; and, second, a semi-facultative relation, where, of several stages which the organism exhibits, one may be passed in man, as in the case of certain sporozoa; and, third, an obligate parasitism, in which the organism is known solely as it affects man, of which the lepra bacillus is a good example. The importance of recognizing these grades of parasitism appears from this fact: that, if the organism is obligate, it necessarily can be carried only from patient to patient, and is, therefore, much easier of control, and exposure is less constant and widespread. Of the forms which are obligate, the majority pass through a period of slow growth in the

body, when they are latent, or seemingly inactive. During this time four processes are taking place, two of which are bacterial and two somatic; namely, the multiplication of the germs, the increase in the amount, and often in the virulence, of their poison, the local reaction, and, later, a more general preparation for defense.

The modes of entrance into the body require but little discussion. A wound of the external surface may admit the bacillus of tetanus; a special variety of such wounds is due to insects, by which malaria, yellow fever, tetanus, and other diseases may be spread. The wound may be on the internal surface, on any one of the mucous membranes; and it is important to remember that the general mucosa is only a part of the external surface which has been folded in. But another important mode of entrance through the internal surface requires no wound, and presents the reverse picture of phagocytosis. In the bronchial mucosa, the tubercle bacillus, and in the alimentary, both tubercle and typhoid bacilli are frequently taken up by phagocytes and carried deeper into the tissue, and there set free to produce disease. Certain natural openings, as through the crypts of the tonsil or along the bile ducts, and places debilitated by injury, where one bacterial form often prepares the way for another, and directly from mother to child through the placenta are still other modes of infection.

Once having entered, the parasite may cause a local injury at the site of admission, and this is frequently one of the forms of typical inflammation. The local injury may persist, and become the starting point of further invasion, either slowly by way of the lymphatics, or more rapidly through the vessels; in the latter case, the veins are apt to be the route taken, since they are less resistant, because of their histological build, and then the infection is centripetal and soon generalized. When an artery is the channel taken by the germ, its territory of distribution is first affected, as a rule, and then the infection passes on through its capillaries into the veins and the general system, but there may be only a short

interval between the effect in the arterial branches and the more distant ones.

In other cases there is no apparent local injury, or the wound may heal and break open later, and under the healing tissue an anerobic culture develops, as in tetanus, to be followed by constitutional symptoms later. The bacteria seldom injure the body mechanically unless they are present in such enormous numbers that they plug capillaries; and their consumption of nutritive matter is so slight a deprivation that it may be disregarded. Their chief effects are due to the products of their own metabolism, and is hence a form of poisoning, differing from other toxic action because the poison is produced within the body, by a self-perpetuating agency, and usually in direct proportion in amount to the number of the bacteria and in virulence to their vigor of metabolism. Differences are noted in the lesions according to differences in the bacteria and their metabolic products. Locally there may be any variety of inflammation. Generally there is fever, and this is essentially protective, and so a rational therapy for such cases would be to put them in an atmosphere of superheated dry air and sustain them while there. The fever may be so characteristic that the variety of bacterium present may be recognized by that alone. Whatever tissues suffer by such an attack, the central nervous organs commonly do not escape, for the complexity and delicacy of their chemical composition exposes them to destructive action by both the bacterial products and also the results of deranged somatic metabolism. In origin and nature these infectious poisons are closely related, but they differ from each other in effects and by fairly constant characters. We may postulate that for every typical infectious disease there is a typical poison produced by a micro-organism.

Many bacterial poisons resemble in their action the vegetable alkaloids, like strychnin and morphin; others act like ferments, such as trypsin and steapsin; others are proteid, and resemble peptone and albumose; and the general name for all varieties is toxin. Most of these toxins are destroyed at a temperature of

55-65 degrees C. and by some chemicals, including acids and oxidizing agents, less by reducing. Their power is best seen in the case of tetanus toxin, of which 0.00025 gram is fatal to one kilogram of living animal tissue; or, to put it another way, a single grain would be fatal to 572,000 pounds. These toxins may be recovered from cultures of the germ or from bodily parts and organs after infection. Some bacteria produce more than one toxin. Thus diphtheria bacilli from which the diphtheria toxin has been all removed will cause necrosis when injected because of a secondary poison.

The Conditions of Bacterial Activity Within the Body.—Fortunately, many conditions must coexist before bacteria can flourish and produce toxins within the body. They must be present in relative numbers, and most of the bodily conditions are unfavorable to the entrance of great numbers. They must be vigorous to be virulent, and most forms are sensitive. They must find the proper environment, and this includes the right temperature, the right kind and quantity of moisture, supply or absence of oxygen, proper chemical constitution of the tissue, and for some the presence of other forms. Perhaps all of these conditions are included in the collective term disposition, which is as indefinite as it is unquestionably an element in infection. The disposition to disease may be temporary, resulting from improper hygienic influences, or it may be hereditary, and then we have an individual or a race whose characteristic is to be good breeding ground for a particular micro-organism; this must be interpreted as a reversion to a lower level of racial development. Such a disposition is the exception; most of us are the product of a long series of unconscious selections, and the race as a whole must be growing less and less liable to diseases.

Various people, and the individual at different life periods, show all grades of liability to disease. Thus in one case simply inhaling or swallowing the micro-organism may cause a general infection; in other cases there is a local injury, and only when the body has been weakened by this, and the protection of the

membrana limitans been passed, does the effect become general; or a relatively innocent germ prepares the way for a more virulent form, and thus all varieties of "mixed infection" occur; or an ordinary saprophyte in special conditions may become pathogenic. In other words, every infection presupposes that pathogenic germs have entered the body, found satisfactory place and environment, and multiplied beyond the plane of tolerance.

Fortunately, many animal diseases are not communicable to man. Unfortunately for our laboratory work, many of the human diseases can not be given to animals; but man shares a liability to anthrax with the ruminants and the rodents, to glanders with the ungulates, to rabies with the dog, to plague with the rat, etc.; and many animals and insects act as the passive carriers of disease, a phase of the subject which steadily grows in importance.

Immunity.—Resistance to disease may be congenital, a variety which is probably increasing; or acquired, a variety which may be artificially increased, and either specific or not; if specific, it may be natural or artificial. All these grades are grouped under the name immunity. The congenital variety may be individual or racial, and is often of relative significance. Examples are numerous: thus the Algerian sheep are not disposed to anthrax, while all other varieties are. In some epidemics of yellow fever the negroes have shown a relative immunity, and in others the children of both whites and blacks. As a rule the Japanese are immune to scarlet fever.

The acquired form of immunity may result from having had an attack of the disease, and is then called natural or active immunity, or it may be secured by treatment with the germs or their products, and is then known as artificially acquired immunity. For such treatment we may use the micro-organism in a culture weakened by special methods, as heat and cold; or a culture whose germs are dead, leaving only their products in the medium; or a filtered culture, which also contains bacterial products; or the serum of an immunized person or animal. The effects of the latter form, of passive immunity, are not so lasting as those of the active

form. Again, the immunity may be of three varieties, according as it is effective against both bacteria and their toxins (rat and diphtheria), or against the bacteria alone (guinea pig and tetanus), or against the toxin alone (cow and tubercle bacillus). Under special conditions a natural immunity may be destroyed. Thus a fowl, normally resistant to anthrax, may have its bodily temperature lowered and its natural immunity lessened by immersion in cold water for a time.

The Modus of Immunity.—When we consider what may be called the mechanism by which immunity is attained and maintained, we reach a series of interesting and ingenious theories, some of which are of mere historical value and others are yielding helpful information. The cells and fluids of the body are found to inhibit bacterial growth or even to destroy the germs. It has been asserted that the destructive action is due to certain proteid bodies, derived from the leucocytes and called "alexins," which are not specific, but destroy all bacteria alike. Is this the secret of immunity? It can not be, for bactericidal action and immunity do not always coexist. Thus the rabbit is not immune to anthrax although its blood is bactericidal for that bacillus, and the dog is immune although its blood is not bactericidal. Another suggestion is that the serum causes alterations in the bacterium's own vital properties, and cultures in the serum of immunized animals seem to demonstrate this.

Phagocytosis.—Metschnikoff's theory of immunity is cellular, as opposed to the various humoral explanations which have been advanced. From a far-reaching study of various lesions, chiefly inflammatory, embracing both vertebrate and invertebrate forms, he was led to ascribe the chief defense of the body to the work of certain cells which have the power of taking small particles within their surrounding membrane, among them bacteria. From this power these cells were called phagocytes, and divided into the small, which included the mononuclear and polynuclear leucocytes; and the large, embracing vascular endothelia, cells of the bone marrow, spleen pulp, connective tissue, Kupfer's cells, and those of

muscle and nerve tissue. This is a fascinating theory, but is no longer held in its original form. Other observers had seen cells take up finely divided particles. Metschnikoff was the first to interpret this function as defensive. The analogy between such action and that of an ameba swallowing a diatom is very close. But in many infections no distinct phagocytosis has been observed, and in others the phagocytosis comes after the invasion by micro-organisms instead of preceding it or occurring with it. In many cases the bacterial effects are very pronounced, even where leucocytes abound, as in the lymph nodes. In certain cases the englobin cells survive the bacteria, and in others, as gonorrhea, the bacteria outlast the cells. The invasion of the cell may be an active process on the part of the bacterium instead of a passive ingestion. Moreover, when a non-motile tubercle bacillus is carried deep into the tissue, as to a bronchial node from the surface of the bronchial mucosa, and in the former place is set free to begin a caseous necrosis, or when similar effects are noted with both tubercle and typhoid bacilli in the intestine, the activity of the white cell can not be considered as defensive. These are some of the arguments which tend to diminish the applicability of the theory.

The crux of the matter is just here: In what condition are the bacteria within such phagocytes? Bacteria in cultures, under the most favorable conditions, suffer degeneration, and so "involution forms" are part of every bacteriologist's experience; and there is no reason why bacteria should not degenerate and be taken up by cells while in the fluids of tissues of the body. The assumption of a strife between a healthy cell and a vigorous bacillus, the former in every true sense overcoming and swallowing the other, digesting it, and casting out the remnants, now harmless, for elimination by various organs; and the further assumption of such a relation between cell and germ generalized into attacking and defending armies we must consider gratuitous. As a matter of fact, the cell may be destroyed by the germ, or the latter may live within it for an indefinite time, as the tubercle bacillus in the giant cell, and survive its destruction, and collections of inter-

cellular bacteria may cause the development of new cultures in proper conditions. Pfeiffer injected the comma bacillus into the peritoneum of an artificially immune guinea pig, and the peritoneal fluid destroyed them; there were no phagocytes present. But if cyto-tactic material were first introduced into the cavity, then phagocytosis followed the introduction of the cholera bacillus. As a general rule the serum of an animal immune to any disease causes clumping, agglutination, and flocculent deposit of the corresponding bacteria. This has been interpreted either as a defense or as an early stage of infection.

It is fairly well agreed that a protecting substance exists, and that it comes from leucocytes, but one group of authorities holds phagocytosis all important, and the other considers it secondary. All that can be claimed is that phagocytosis does occur after subcutaneous injection of bacteria; that phagocytes are more numerous in resistant animals; that bacteria may live for a time in the bodies of the phagocytes; and that the same thing occurs in the peritoneum after injection of cytotactic material.

Immunity against the bacterium is sometimes termed anti-infectious, and, if manifested against the poison, anti-toxic. Now it has been found that a serum may be strongly endowed with the former quality and little or not at all with the second. But as a rule antitoxin is a substance in the blood of an immune person or animal which protects against a specific disease, and usually it possesses both qualities. Among the best known are the antitoxin of diphtheria and of tetanus. Toxin immunity is naturally shown by certain men and animals against snake and spider bites, and certain chemical poisons. It may be developed by withstanding repeated small doses of the poison, and this principle is used in immunizing both animals and men, by injecting minute but slowly increasing doses either of bacteria or their products until a high degree of immunity is reached. Frequently the toxin is used first until the animal is able to endure small doses of bacteria, perhaps attenuated by special methods of cultivation. Many curious results

are noted in such work. At times the animal has no more antitoxin in its blood, and yet it is wholly immune, or it may die from the disease, although its serum is powerfully antitoxic; the latter condition is called super-susceptibility.

Immunity can not be due entirely to the action of serum as such. At first the idea of a chemical reaction between the toxin and the antitoxin seemed the rational view, but it is now considered rather less direct. Mixtures of snake toxin and antitoxin when injected into an animal may be entirely inert, but, if the mixture be first heated to 70 C., a temperature at which the antitoxin is destroyed but the toxin is not affected, then the result may be fatal. Undoubtedly the relation between the protective and the destructive agent or agents is of complicated chemical character. It has been supposed that the blood contains certain defensive bodies of proteid nature, called alexins by Buchner, and by Hankin divided as follows:

1. Sozins. Proteids normally present in the blood, globulicidal, destroying both red and white cells; bactericidal, destroyed by exposure to light or to a temperature of 55 degrees C., divided further into myco-sozins, which resist bacteria, and toxo-sozins, which nullify bacterial poisons. 2. Phylaxins. True antitoxin, formed within the body of an immune animal, neither globucidal nor bactericidal, withstanding exposure to 70-80 degrees C., divided into myco-phyloxins and toco-phyloxins.

By far the most ingenious and important explanation offered is known as the side chain theory of Ehrlich. This has yielded secondary and surprising applications in forensic medicine and along other lines, and has justified itself by one of the most severe tests. The conditions foretold, upon the basis of its main principles, have been found actually to exist. The theory was published first in 1897, and the starting point for its formulation was the significance of the high reparative powers of cells and tissues, in excess of the actual needs of repair, which was emphasized by Weigert at the Wiesbaden Congress of the year before.

Ehrlich regards the bodily cell as of every complex proteid con-

stitution, with manifold and various powers of entering into combination; but, on the analogy of the benzole ring, which preserves its nucleus of C_6 despite numberless changes in the side chain, the complex cellular group has its vital chemical nucleus with which its identity is inseparably bound up. The side chains are attached to this vital nucleus (which must not be confounded with the cell's nucleus, which takes stains), and, while they are not absolutely indispensable for the life of the cell, they act as unsatisfied bonds and fix nutriment to the cell. From their grasping action they have been called haptines, and from their receiving action, receptors. These are considered as of three orders:

1. The simplest fix molecules of nutritive value, toxins, and cellular products. Cast loose from the cell they may float in the blood and act as antitoxin. 2. The second order, with one affinity, fix a more complex molecule, while with a second they functionate as ferments and digest the material for the use of the cell. 3. The third order are supposed to have three bonds, by one of which they cling to the cell, by another to the molecule attacked, and by their third they disintegrate the latter. Separated from the cell and floating in the blood they have two unsatisfied bonds, and thus are called amboceptors, or immune body.

A cell which has been stimulated to the production of such side chain receptors may form them in vast excess, by a quasi process of education, because of the inherent ability of every cell to repair beyond actual needs, and then these receptors, thrown into the blood in great quantity, each with unsatisfied bonds, functionate as antitoxin; because, as soon as the toxic molecule is reached, they combine with it and neutralize it. Not being connected with a cell, the process ends when the receptor combines and renders the toxin harmless. The side chain theory assumes in the blood of an infected animal the presence of two kinds of elements devoted to the poisoning of the cells; one, called haptophores, unites with the receptors of the cell, and thus enables the others, called toxophores, to poison it. The mechanism is thus seen to be a special modification of the normal nutritive process. Now, when disease invades

the body, and poison of bacterial origin circulates in the blood, either free or still in the bodies of the bacteria, the cells of the body are stimulated to produce side chains, or receptors, in great abundance; these are cast off and float in the blood, and those of the third order, the amboceptors or immune body, are of the greatest service in combining with the toxophores and neutralizing them. If the supply of immune body is copious, the patient resists the attack. Moreover, a fact of vast importance for practical serum therapy, the immune body derived from another organism may be injected into the circulation of the person attacked at a time when his cells have not yet begun to furnish their own in sufficient quantity, and thus the poison is neutralized while in the circulation and before it can combine with the cells and do any harm. When the patient has withstood an attack, his blood may have so many free receptors, or so much immune body, that he is refractory or immune, and this is called active acquired immunity. In many cases the supply diminishes, and, hence, after a variable period, he may again become susceptible; that is, such immunity is often but temporary.

The element with which the amboceptor combines is called complement. These two substances act differently under the same conditions; for instance, the complement is destroyed at a temperature of 55 degrees C., and is hence termed labile, while the amboceptor or immune body resists 75 degrees C., and is called stabile. Various synonyms have been used for these two factors, and much confusion has resulted. The immune body has been called desmon, sensitizing substance, amboceptor, and intermediate body. The destructive principles are known as lysins or cytotoxins. The special one of these which acts in any given case has been called complement, addiment, and lysin, often with another word joined to it, as bacterio-lysin. In general the amboceptor mediates between the destructive agency and the cell affinity which is sensitive to it.

The course of progress may be traced by a brief resume of the various theories of immunity advanced at different times. Thus Klebs and Pasteur explained immunity as arising because some-

thing essential to the growth of the bacteria has been used up, exhaustion of the medium, in other words (C. R. XCI, 1880; Arch. f. exp. Path. XIII).

Chauveau and Wernich supposed that the bacterial products accumulated to a percentage incompatible with the further growth of the germ as mucor ceases to grow when it has formed 3-4 per cent of alcohol, and saccharomyces with 18-20 per cent (V. A. 78; C. R. XC and XCI).

Grawitz imagines a conflict between the cells and the bacteria, in which the former become experienced and hence more resistant.

Buchner suggested that the germs tend to exert a local action, and that here there is an inflammatory reaction, and thereby the cells become so modified that the same germ can not affect the same place again.

Metschnikoff asserted that the leucocytes swallow bacteria as the ameba swallows food, the bacteria are destroyed and thrown off, and are eliminated by various organs (V. A. XCVI 177; Ann. d. 1 Test. Past., t. 1, 1887; Immunité d. 1 mal. Infect., Paris, 1901).

Fodor, Buchner, Hankin. Fresh serum is bactericidal because of the presence in it of alexins and sozins and phylaxins. The cellulo-humoral theory finds various "anti-bodies" in cells and tissues. Ehrlich's side chain theory (Klin. Jahrb., 1897).

DISCUSSION.

DR. SIMPSON, Waxahachie: I have thoroughly enjoyed this paper. It certainly covers a rich field of labor and study. We know that many of the diseases, syphilis, smallpox, yellow fever, and many others have been modified. Just how, we do not know. It may be that the side chain theory furnishes the key. There is certainly something in the human body that is modifying disease.

SURGEON H. R. CARTER, of the United States Public Health and Marine Hospital Service: Before leaving Baltimore, I read a lecture before the Johns Hopkins Medical Society. I am not going to attempt in five minutes to give you a synopsis of that lecture. It was a development of the side-chain theory. It is simply wonderful how beautiful this theory is as a working hypothesis. It is somewhat complicated, and really looks more complicated than it is. It is a hypothesis. No one pretends that it is

the truth, but it is a beautiful hypothesis, which ecery one should be familiar with, especially those interested in modern surgery.

DR. THAYER, closing: In writing this paper I might have gone on the assumption that the audience would be fairly familiar with the details of the subject, and have presented the paper from that standpoint, but I thought it would be more useful if I covered some of the general aspects of the subject. As Dr. Carter suggests, to go into the matter thoroughly would require more of the afternoon than we have at our disposal. As to the theory that the race is outgrowing its tendency to disease, I think that is thoroughly justified.

THE CONSUMPTION AND ELIMINATION OF WATER IN DRY AND MOIST CLIMATES, WITH SPECIAL REFERENCE TO THE CAUSE OF BRIGHT'S DISEASE.

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For a considerable time it has been felt by the physicians and people of Galveston that Bright's disease is more prevalent here than in most communities. The reports of the John Sealy Hospital of this city do not show the proportion of cases of Bright's disease in the medical wards to be any greater than in the hospitals of other cities. A comparison of the mortality statistics, however, shows that there are more deaths from Bright's disease in proportion to the total number of deaths than in most cities, in spite of the fact that the mortality rate (per thousand of population) is remarkably low. With the exception of New York City, the percentage of deaths from this cause is nearly double that of most of the large cities in various parts of the country.

This condition is commonly attributed to climatic conditions—to the high degree of relative humidity, together with the long season of warm weather. Different theories have been advanced to explain how these conditions could possibly produce disease of the kidneys. Some contend that this atmospheric condition interferes with evaporation from the skin and throws greater work upon the kidneys; others hold that in the effort at heat regulation the sweat glands are more active, resulting in a concentration of the urine which causes irritation of the kidneys and possibly interferes with renal excretion.

The observations presented in this paper were undertaken with the object of determining the influence of dry and moist climates upon the amount of water consumed and the amount given off as urine, and whether or not there is any relation between the prevalence of Bright's disease and the climatic conditions.

The first observations were made by the writer upon himself over a period of six days in Boulder, Colorado, at an altitude of 5400 feet above sea level and these were contrasted with similar observations in Galveston at the sea level. The former observations were made in July; the latter ones in September. While the weather was a little warmer during the series in Galveston, the difference of temperature was not so great as the difference in humidity. No effort was made to take fluid at regular intervals or to take a uniform diet, but the natural inclinations were followed in this regard and the amount of fluid taken as a drink recorded. These were not added up until after the series was completed so that no mental factor could enter into the results in any way. The conditions were very similar in regard to exercise, etc. Coffee was taken once a day, with breakfast—an average of 165 c.c. in Boulder and 300 c.c. in Galveston. If the difference in the amount of coffee consumed had any effect, it should have caused greater activity of the kidneys during the series of observations in Galveston. By strange coincidence the average of the six days in Boulder and that of the nine days in Galveston show that exactly the same amount of urine (1404 c.c.) was passed in both series. The average daily amount of water taken as drink was 2140 c.c. in Galveston, while that in Boulder was 1940. This means that the moisture given off by the lungs and skin in the moist climate exceeded that given off in this way in a dry climate by 200 c.c. From September 18th to September 24th there was a Texas "norther," i. e., cool, dry breezes from the north prevailed, and there was very little sensible perspiration, as the weather was pleasant. During this time there was little difference between the water consumption and elimination in Galveston as compared with that in Boulder. During the first and last days of the observations in Galveston the weather was hot, sultry and uncomfortable, causing considerable sensible perspiration and during these days more water was consumed and less was given off in the urine.

TABLE I (*Condensed.*)

Observation at Boulder, altitude 5400 feet.

Date of observation July 17 to July 22, 1899.
Average dry bulb thermometer, 73.5 degrees F.
Average wet bulb thermometer, 62.8 degrees F.
Average dew point, 54.9 degrees.
Average relative humidity (per cent), 52.2.
Average quantity of water consumed, 1941 c.c.
Average amount of urine voided, 1404 c.c.

TABLE II (*Condensed*).

Observation in Galveston, at sea level.
Date of observation, September 17 to 25.
Average dry bulb thermometer, 79.2 degrees F.
Average wet bulb thermometer, 69.8 degrees F.
Average dew point, 63.2 degrees.
Average relative humidity (per cent), 58.6.
Average barometric pressure, 761.8.
Average quantity of water consumed, 2139 c.c.
Average quantity of urine voided, 1401 c.c.
Average specific gravity, 1.017.

The observations of temperature, pressure and humidity were made in the middle of the forenoon and in the middle of the afternoon in the series in Boulder and a mean of these is given in the table. Similar observations were made every three hours from 8 a. m. to 11 p. m. in the Galveston series and an average of these is given in the tabulation.

These observations are open to the objections (1) that they were made upon a single individual and (2) that there was not only a difference of humidity but also a vast difference in atmospheric pressure, as Boulder is nearly one mile above sea level, and the latter might influence the circulation and possibly metabolism. To overcome these objections arrangements were made to carry on observations simultaneously upon three individuals in San Antonio and also upon three healthy adults, besides the writer, in Galveston. These were made in September, 1903, and to compare the climatic conditions the officials of the United States Weather Bureau at both of the stations have very kindly furnished three observations daily as to the temperature and humidity during this period. San Antonio is only about 700 feet above sea level and in general

it may be said there is little difference in the mean temperature of these two cities. The chief difference is in the relative humidity and this is most marked at noon and in the evening. There is also a much greater difference between the maximum and the minimum temperatures in San Antonio than in Galveston.

As in the first series no effort was made to use a uniform diet or to take fluid at regular intervals, but the natural inclinations were followed and all fluid taken as drink was recorded. As the object of the observations was unknown to the physicians and pharmacists who kindly assisted me in making these observations, it can be said that the results were not affected in any way by any mental influence.

The subjoined tables show the climatic conditions and the amount of water consumed as drink and eliminated in the urine. The urine was collected for the day (7 a. m. to 7 p. m.) and night (7 p. m. to 7 a. m.) separately and the specific gravity taken in each case, but these details do not bear upon the results. Generally more urine was passed during the day as more fluid was consumed in this period and as the perspiration which accompanies this period of activity is greater, the specific gravity was generally higher for the day than for the night period.

TABLE III (*Condensed.*)

Observations of different individuals in Galveston, September 15 to 26, 1903.

Average mean temperature, 75.8 degrees F.
Average mean humidity, 63.8 degrees F.
Individual No. 1:
  Average water consumed, 2616 c.c.
  Average urine voided, 1064 c.c.
Individual No. 2:
  Average water consumed, 2045 c.c.
  Average urine voided, 1245 c.c.
Individual No. 3:
  Average water consumed, 1956 c.c.
  Average urine voided, 696 c.c.
Individual No. 4:

Average water consumed, 1800 c.c.
Average urine voided, 899 c.c.
Mean average water consumed, 2104 c.c.
Mean average urine voided, 976 c.c.

TABLE IV (*Condensed*).

Observations in San Antonio, September 15 to 22, 1903.
Average mean temperature, 72.6 degrees F.
Average mean humidity, 59.1 degrees F.
Individual A:
Average quantity of water consumed, 1621 c.c.
Average quantity urine voided, 1385 c.c.
Individual B:
Average quantity of water consumed, 1849 c.c.
Average quantity urine voided, 1078 c.c.
Individual C:
Average quantity of water consumed, 1733 c.c.
Average quantity urine voided, 1191 c.c.
Mean average water consumed, 1734 c.c.
Mean average urine voided, 1218 c.c.

A comparison of the average for seven days (September 15 to 12) shows that the average daily amount of fluid consumed in San Antonio was 1734 c.c. and the average amount given off was 1218 c.c. The averages in Galveston for the same period were 2126 c.c. of water as drink, and 1016 c.c. of urine. The observations were continued for eleven days in Galveston and an average for this period gives 2104 c.c. of drink and 976 c.c. of urine.

These results show that the average daily amount of fluid consumed in Galveston was approximately 400 c.c. greater than that taken in San Antonio, while the quantity of urine was approximately 200 c.c. or 240 c.c. less. The use of coffee did not cause this difference for more coffee was consumed by those in Galveston than those in San Antonio. The average daily amount of coffee consumed was as follows: In Galveston, I, 320 c.c.; II, 310 c.c.; III, 380 c.c.; IV, 150 c.c. In San Antonio, A, none; B, 380 c.c.; C, 200 c.c. If the diuretic action of the coffee vitiated the results it was to give too high an average for the daily amount of urine in the Galveston series.

COMPARISON OF MORTALITY RATES AND OF CLIMATIC CONDITIONS IN DIFFERENT CITIES.

City.	Total No. of Deaths from all Causes.	No. of Deaths from Bright's Disease.	Annual Mortality Rate per 1000 of Population.	Percentage of Deaths due to Bright's Disease.	May.		June.		July.		August.		September.	
					Mean Humid. (Per ct.)	Mean Temp.	Mean Humid. (Per ct.)	Mean Temp.	Mean Humid. (Per ct.)	Mean Temp.	Mean Humid. (Per ct.)	Mean Temp.	Mean Humid. (Per ct.)	Mean Temp.
Denver	2,484	94	18 6	3.8	56	56°	52	66°	48	72°	49	70°	50	62°
Boston	11,277	371	20.1	3.2	70	56°	68	66°	72	71°	76	69°	79	62°
Atlanta	2.387	81	26.6	3.4	62	69°	67	76°	78	78°	75	77°	75	72°
I. dianapolis	2.817	87	16.7	3.1	65	63°	69	70°	62	76°	64	74°	68	66°
Kansas City	2,852	86	17.4	3.0	66	64°	65	73°	63	78°	66	76°	69	68°
St. Paul	1,574	91	9 7	5.7	61	57°	63	68°	68	72°	69	69°	73	61°
Minneapolis	2.183	102	10.8	4.6										
St Louis	10,320	524	17.9	5.8	69	66°	67	75°	64	79°	67	77°	71	69°
Baltimore	10,679	659	21 0	6.1	67	64°	69	74°	71	77°	73	75°	80	68°
Philadelphia	27,452	1,322	21.2	4.8	66	62°	66	72°	70	76°	72	74°	75	67°
New York	70.229	5.118	20.4	7.28	67	60°	69	69°	73	74°	74	72°	75	66°
New Orleans	8.287	496	28.9	5 9	74	75°	75	80°	79	82°	80	82°	79	78°
San Francisco	7,040	368	20 5	5.2	82	57°	83	58°	85	58°	87	59°	79	70°
San Antonio	1,294*	34	23 6	2 6	70	75°	68	81°	67	83°	68	83°	69	78°
Galveston (3 years)	1,871	191	15 7	10.2	80	76°	80	82°	78	84°	79	83°	78	79°

*Total number of deaths=1,441 but 147 deaths from tuberculosis occurred among non-residents and these were deducted.

These results confirm the first series of observations and seem to justify *the conclusion that one takes more fluid as drink in a moist climate and passes less urine than in a dry climate.* Probably the amount of moisture given off by the skin and the lungs in dry climates is not so great as is often thought. The sensible perspiration which results from the effort at heat regulation on the part of the animal economy in a hot, moist climate probably accounts for this difference.

The important question now arises, Has this anything to do with the causation of Bright's disease? This question can not be answered by general impressions nor by comparing small numbers. In Table V will be found a comparison of the mortality records of different cities for the year 1900, taken from the United States Census Report, and of the climatic conditions, taken from the reports of the United States Weather Bureau. The percentage of relative humidity for the summer months is the average for the three years 1900, 1901, and 1902. The temperature is the "normal temperature" for these cities and represents an average for about twenty years. The humidity of Galveston and San Antonio is also the average for sixteen or more years.

In the case of Galveston the total number of deaths and the proportion of deaths from Bright's disease are taken for a period of three years (1901 to 1903 inclusive), as this gives a longer period of time and a safer number for making comparisons. It is impossible to determine from the records of the Health Office the proportion of acute to chronic Bright's disease or the proportion of parenchymatous and interstitial forms of the disease. The cause of death is often reported as "Bright's disease" or "uremia." The records of the John Sealy Hospital of this city do not show an unusual proportion of acute Bright's disease, and the numbers of chronic parenchymatous and chronic interstitial forms vary for different years but do not appear to differ from those reported from other hospitals. It is the opinion of medical practitioners in Galveston that the disease is generally chronic and seems to attack young people (under 20 or 25) with unusual frequency. In such

cases it is usually parenchymatous degeneration primarily with secondary interstitial changes, and often there are also arterial changes. When the disease occurs in middle or advanced life, the interstitial form seems to be more frequent and there is pronounced arterio-sclerosis.

A careful study of the table shows that there is no relation between degree of humidity or length of warm summer season and the mortality from Bright's disease; nor does the latter bear any relation to the general mortality rate. For instance, in Denver and Boston the conditions of temperature are very similar while there is a wide difference in the humidity, but the proportion of deaths from Bright's disease is practically the same. There is considerable difference between the relative humidity in Galveston and in San Antonio and also in the proportion of deaths from Bright's disease; but, on the other hand, the mean humidity and temperature are very similar in New Orleans and Galveston, but the death rate from Bright's disease in the latter city is nearly double that in the former. Indeed, the mortality rate from Bright's disease in New Orleans does not differ from that in New York, Philadelphia, Baltimore, St. Louis, St. Paul and Minneapolis, although the climatic conditions are very different.

Doubtless there are errors of diagnosis in many obscure cases and often the existence of Bright's disease is unrecognized, but these conditions exist in all communities and a comparison of statistics is the only means that we have of determining the unusual prevalence of a disease in any locality. There appears to be no doubt that Bright's disease is more prevalent in Galveston than in most cities, but it seems highly improbable that the climatic conditions have anything to do with this. Galveston is an exceptionally healthy place, and the general mortality rate is low (15.7). The high general mortality rate in Atlanta and in New Orleans is doubtless due to the large colored population. Notwithstanding a considerable colored population the mortality rate of Galveston is low, and it will be observed that there is no relation between the general mortality rate and that from Bright's disease in any of these cities.

It has been suggested by some that the use of hard artesian water might have some causal relation, but this seems improbable, as other cities have a public water supply from the same source but no such result is observed. To the writer there are two causes which seem more plausible than any of the explanations: (1) The excessive use of meats in a climate in which proteids can not be so readily metabolized as in a colder climate; and, (2) the failure to recognize and properly manage acute infections. Scarlet fever is very often so mild that it is unrecognized and never treated. All the diseases of childhood are unusually mild in Galveston. This is probably due to the high resistive powers which result from the outdoor life at all seasons in a mild climate and on the seashore. Doubtless dengue and influenza, like scarlet fever, can leave a dormant lesion of the kidneys which gradually develops into a chronic nephritis, even though the acute symptoms from the original disease may have been very mild. This would appear to be a very important matter and too much care can not be exercised in attending to the after-effects of mild attacks of acute infections.

DISCUSSION.

DR. MCCRACKEN, Mineral Wells: I have seen a great many cases of Bright's disease in Mineral Wells, and am anxious to know what you think is the cause of so many cases in Galveston? It seems to me that there are many more cases from Galveston than from any other part of the State. It has been my observation that these people are excessive meat eaters, but what part that plays in the causation of Bright's disease, I am not prepared to say.

DR. W. F. WEST, Waxahachie: I was very much interested in this paper. I think this will stimulate further research along these lines. Not being a resident of Galveston, I must depend upon what people tell me who live there. They state that they have no malaria there. As to why Bright's disease should be so prevalent in some localities, I can hardly understand. Do you think it is possibly due to some salts in the water?

DR. J. M. FRAZIER, Belton: I feel like thanking the doctor for his excellent paper, which is certainly a very important and practical study of a disease which confronts the general practitioner. The question as to the causes of Bright's disease, and its greater prevalence in some localities than in others, is certainly of greatest importance. In Belton, it is a

subject in which I have been greatly interested. It has been my lot to have a great many cases of nephritis; so much so, that people there are beginning to say that Dr. Frazier is finding more kidney trouble than anyone else. I make a microscopic examination of the urine. The people think that possibly this prevalence of kidney trouble is due to our artesian water. I have always had a high opinion of our artesian water. It comes from over 1000 feet in the earth. I do not know what Dr. Carter's opportunities for studying the question have been. I should like to know if a large amount of soda, magnesia and the ordinary salts may have something to do with the causation of Bright's disease. I understand that in Galveston they also have artesian water, and it occurs to me that Dr. Carter might take up this phase of the subject to advantage.

DR. ALBERT WOLDERT, Tyler: I want to express my sincere pleasure at the amount of information I have received in the reading of Dr. Carter's paper. He may be on the right track. Of course, he has not yet secured sufficient data, and has been unable to carry on sufficient experiments to justify us in basing any radical conclusions upon them. In Philadelphia, while studying the supposed effects of climate on another disease I procured the observations from the office of the Weather Bureau for twenty years. However, the head of the department admonished me at the time that physicians would come there for data, which they would get and take away with them. Later, another would go there, and presumably find what he wanted and both would be satisfied. Each of them would subsequently publish reports and each one would contradict the other. For the poses of studying the effects of climate on diseases these reports made by the United States Weather Bureau are almost worthless, because they are preserved in order to study their effects on agricultural and not medical subjects. For their effects on disease the observations would have to be made five or six times a day instead of only twice a day. Dr. Carter has adopted the only sensible way, in having the conditions in these different cities observed concurrently. In regard to the prevalence of Bright's disease in Galveston, I am not certain but that we would find it equally prevalent in all portions of the State, if the microscope was brought into more frequent service.

METHODS FOR PREPARING SPECIMENS TO BE SENT FOR PATHOLOGICAL EXAMINATION.

M. C. SCHAEFFER, M. D., GALVESTON.

In our laboratory I have often found that material sent for examination had spoiled because it was not placed in a preserving medium, or had been placed in fluids which interfered with making certain examinations.

Solid Specimens as Tumors, Organs, or Scrapings.—A short history should accompany every specimen sent. Such history should include the name, or initials, the sex, age, and color of the patient; the location from which the specimen was taken. When only a section from the specimen is sent, a full description of the whole specimen should accompany, also the clinical diagnosis made by the attending physician; the probable cause in case it was a tumor; the rate of growth. If the tumor is considered to be malignant, and a report is desired at once, such facts should be noted, in which case the routine laboratory method which is the most convenient, but not the quickest, will be substituted by a rapid method.

The best and most convenient preserving fluid in which specimens can be sent to the laboratory is a 2 or 2½ per cent aqueous solution of formaldehyde, which is equivalent to about a 5 per cent solution of commercial formalin, or ethyl alcohol, ranging from 70 per cent to about 95 per cent; i. e., ordinary commercial alcohol. Formaldehyde is a cheaper preservative than alcohol, and it requires a longer time for preparing a specimen, but the results are equally good with formaldehyde or alcohol. When in haste, the specimen should be sent in an 80 per cent alcohol, that the fixation and dehydration of the specimen will be well under way when it reaches the laboratory. We have received specimens placed in chloroform, glycerin and other media, which took con-

siderable time to be removed from the tissues, or in some cases acted deleteriously on them. We have even received specimens without the addition of any preservative, in which case often no satisfactory report can be sent, as the tissues were too much disintegrated to be of use. The amount of preserving fluid should be at least eight to ten times the bulk of the specimen.

Scrapings from Uterus, or Cervix, or Nares.—Such scrapings are often small and mixed with blood. We have had blood clots, two inches long, sent us, in which we were not able to detect any scrapings by making gross sections. The largest blood-clot was at least four inches long. During the operation scrapings are mixed with a considerable amount of blood. They should be washed preferably in a ½ per cent solution of common salt, to remove the blood before they are thrown into the preservative. Small bits less than half as large as a split pea can be satisfactorily sectioned. However, it is always preferable to work with larger specimens, and to get most satisfactory reports the physician should select a number of the largest.

Specimens of blood, depending upon the probable diagnosis of the attending physician, will have to be variously prepared. Blood should never be sent in a fluid state unless the disease suspected is typhoid fever. Blood can be placed in a small sterilized homeopathic vial or can be collected in a capillary glass tube, which is then sealed at both ends by heat. A convenient and better way than the above for making a specimen of blood requiring a Widal test for typhoid fever is as follows:

Take several ordinary laboratory slips (pieces of glass 1x3 inches), clean thoroughly by washing with soap and water, and wiping with a clean cloth. The slide at its middle-point is applied to a drop of blood which is gotten by pricking the pulp of a clean finger or the lobule of the ear. At least two, preferably three, slides should be prepared so each will have an ordinary sized drop of blood on or near its middle-point. One prick of the finger will usually supply this amount. Dry in the air, protected from dust; when they are ready for shipping. The most convenient

way to send the slides to the laboratory is by putting them in slide mailing-cases. If such are not at hand, cut slips cardboard, the exact size of the slides; then cut out the center of the slips, so that when placed on the surface of the glass slide containing the drop of blood there is a considerable space between the dry drop of blood and the margin of the space cut out. Place the slides and cardboard frames above each other, so the blood will not be rubbed off. Protect the slides from being broken by placing thin pieces of wood on the top and bottom of the pile. Pack in a small wooden box, protected with cotton.

For the examination of malarial organisms, or blood counts, the glass slips must be most carefully cleansed by washing with soap, water, alcohol and ether successively, and dried. The fingers should hold the slide by the long margins, not touching the surface nor the ends of the slips. Three blood spreads are made as follows: The slides are laid on a piece of writing paper. The second or third finger of the left hand is washed with soap and water, alcohol and ether. When dry engorgement of the blood-vessels of the tip of the finger is induced by passing a string tightly around the second phalangeal bone. Prick the finger preferably with a surgeon's triangular needle. Touch the surface of the drop of blood lightly with one of the clean slides one-half inch from one end. Now draw the ground edge of another slide held at an angle of 45° over the surface of the slide containing the blood, that it may be evenly spread as a film over the greater part of the surface of the slide. The slides so prepared should be dried in the air, protected from dust and are ready for packing. Unless the film is thin and well-spread it is of little or no value for making a diagnosis.

We have received films of dried blood spread between two slides. Such films are never of any value, because of coagulation between the slides, and the consequent impossibility of obtaining an even, thin film.

Urines usually do not reach the pathologist until twenty-four hours or more after collecting. They are liable to decompose un-

less collected very carefully, even often when preservatives were added. If a specimen of a 24-hour urine is to be sent to the laboratory it is even necessary to be more careful in the collection than when only a specimen of the first urine passed in the morning is sent. The genitals should be bathed before the specimen is collected. All vessels used in collecting should be perfectly clean, the bottle and its cork should be sterile. The simplest way of sterilizing is to boil a clean bottle and cork for about five minutes. Empty the bottle and cork at once. Leave it corked until needed. To use as few vessels as possible, the urine can be passed through a clean funnel into the bottle. Formaldehyde or chloroform added to urine as preservatives interfere with the chemical examinations, while chloroform also interferes with the microscopical examination, as the globules which it forms mask the morphological constituents of the urine. If possible, three ounces of urine should be sent as a specimen. Dr. Terrill suggests two bottles of urine should be carefully collected. To one which is to be used for chemical examination no preservative is to be added, while to the other a small amount of formaldehyde should be added, in order that casts and epithelia may be preserved. To a specimen of three ounces, 15 gtt. of formalin will be sufficient. The specimen should be sent without delay. The specimen containing the preservative should be labeled.

In sending feces for examination for ova, or the embryos of parasites, a small amount of the stool should be sent in a wide-mouthed container. The examination for amœba is most satisfactory while the stool is still warm, in order that the amœbæ, if present, can be found while active. When the patient and the pathologist live in the same town, the attending physician can leave instructions for the collecting of the stool so it can reach the laboratory soon after its discharge. On a cold day, the well-stoppered container can be kept warm by placing it in a pail of water, if the distance it is to be sent is not too great. If it is to be sent through the mail, some of the mucus and bloody portion of the stool is taken up with a spoon and put into a 2½ per cent solution of for-

maldehyde, and packed. Worms or other macroscopic organisms obtained from a stool should be preserved in 2½ per cent formaldehyde.

Sputum to be examined for tubercle bacilli or pneumococci should be sent without the addition of preservatives.

To obtain a specimen from a diphtheritic throat, the physician should be provided with two sterile test-tubes of the same size, one stoppered with a sterile stopper (a cotton plug), the other tube containing a sterile wad of cotton attached to one end of a wire, the other end of which is securely fastened in the cork. To obtain a specimen from the throat, the cotton wad is removed from its test-tube, care being taken to catch hold only of that part of the stopper which projects above the mouth of the test-tube, the cotton wad is rubbed over the part of the throat that is the seat of the disease and is then immediately put into the other sterile tube on removing its cotton plug. The tube with the infected cotton should be sent to the laboratory at once.

A mould at times grows in the external auditory canal, causing a painful earache. This mould can usually be recognized by the unaided sight on the plugs of concretion, which can be removed from the ear. If such are to be sent for examination they can be dropped into a small homeopathic vial without a preservative, if sent only a short distance; otherwise, a 2½ per cent solution of formaldehyde added, or the specimen can be wrapped in a sheet of clean writing paper, and mailed. Mould as a parasite has been found in the vagina. Specimens containing flakelets seen floating in a fluid can be preserved in a formaldehyde solution.

I wish to request physicians to preserve all perfect embryos obtained in their practice. The best preservatives again are a 2½ per cent solution of formaldehyde, or an 80 per cent alcohol. The gift of embryos younger than 3 or 4 months to the department of embryology of the Medical Department of the University of Texas would be very much appreciated. In the history accompanying each in the museum, credit will be given the donor of the specimen.

SECTION ON OBSTETRICS AND DISEASES OF CHILDREN.

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THE UNDERLYING PRINCIPLES OF THE NOURISHING OF INFANTS.

JAS. H. BUTE, A. B., M. D., HOUSTON.

Two controlling factors are present in all life; heredity and environment. At the birth of the individual, the first has done its best or worst and can not be reckoned with in the sense of being influenced. Its activity has been through long reaches of past time, and the laws of its operation are but imperfectly understood. The question of environment, being of the present and to a certain extent possible of control, assumes the greatest importance. While, from a purely biologic standpoint, heredity may appear to be the most important influence, yet, in the scheme of evolution, the higher the animal, the more important environment. This is specially emphasized in man by the prolongation of the period of infancy. John Fiske was the first to elaborate this fruitful view of one of the fundamental laws of higher evolution, that not only throws a strong light on the methods of evolution, but lays the greatest importance on the period of infancy as influencing the future development and usefulness of the animal. This long period of helpless infancy is a time of extreme plasticity, when the career of the individual is no longer predetermined by the career of its ancestor. One generation of the lower animals is almost an exact reproduction of the preceding one. The young animal is born pretty fully formed and can look out for itself almost from the beginning, independently of the parent. The longer the infancy of an animal becomes, the greater the period of its teachability, and a slow growth means an increase in capacity for development and all the higher prerogatives. Thus the higher apes have a helpless babyhood, when for two or three months they are unable to feed themselves or move about independently of the parent. The human infant is distinguished from the highest of the lower

animals by the very long duration of helpless infancy and the marked increase in the size of the brain and particularly in the extent of its surface. There is here a great increase in the size and complexity of brain organization that takes place largely after birth. Accompanying the rapid growth of the nervous system is that of the skeleton and various visceral organs. During the first two years of life, the brain not only doubles in weight, but increases marvelously in its convolutions and complexity. The infinite distance between man and the lower animals consists in the fact that in the former natural selection confines itself principally to the surface of the brain and requires a long period of helpless infancy for this highly plastic work to be properly started and developed. Inherited tendencies are present, but the proper environment counts for much in this work so potent in future possibilities. It is evident that, correlated with his long period of helpless infancy, there must be a time of maternal care and watchfulness if the race is to exist in health and vigor. Knowledge is required as well as care, for mistakes made at this time can never be completely corrected. The first few years of life are, biologically speaking, the most important ones we live. The beginning organism has at this time stamped on it the possibilities of future vigorous life or of early degeneration and decay. Hence a careful study and understanding of all the phases of infancy are of the greatest importance alike to physicians and parents. At a period of such rapid growth and development, it is evident that proper nutrition must play the leading part. All competent observers are agreed that the best nourishment for a baby naturally comes from its own mother. Unfortunately, a large number of mothers, from physical or social causes, are unable to give this proper nutriment. It appears to be one of the penalties of modern civilization that an increasing number of women can not or will not nurse their offspring.

Hence it is that in recent years a large amount of study and labor has been expended upon substitute infant feeding. Great advances have been made, but it must be confessed that the results

are not always proportionate to the labor expended. The tendency appears to be to a greater degree of complexity and elaborateness than the average practitioner and mother can understand or apply. Hence discouragement is apt to follow, and a return to old and haphazard methods if the immediate results are fairly satisfactory. Proprietary infant foods also profit by this feeling of confusion as they often agree with the baby for the time being, although not containing the proper ingredients for healthy growth and nutrition.

The effort to place the food principles of milk in their proper ratio has led to "Percentage feeding," which represents a decided advance, but has been pushed to an extreme that is difficult, if not impossible, to apply. I have long thought that some of the benefits of this method of feeding came more from the care and cleanliness with which the milk is handled than from the minute changes in the percentages that are often advised; indeed, analysis sometimes shows that these fine changes are more on paper than in the ingredients of the milk. It is well to think in percentages and be as exact as possible in feeding a baby, but the problem has not thus been completely solved, when we are putting the milk of one species of animal into the stomach of another species having a different digestive apparatus.

The greatest problem in the life of any animal is that of securing sufficient food. All forms of animal life demand the same ultimate food elements, so that really their great diversification is along the lines of methods and organs provided by nature for securing and digesting food. While the outward forms of animals are apparent to every casual observer, their digestive systems, which are hidden, are as much diversified as their more apparent shapes, and are as much adapted for the digestion of particular food as the outward organs are for securing it. Hence the milk of each type of animal must be studied from the standpoint of its special adaptation to the digestive tract for which it is intended: a hard curding milk is intended for a polygastric digestive tract that can properly deal with it; a soft curding milk for a monogastric digestive tract. These differences assume the greatest importance when

the milk of one species of animal is fed to another species. While percentage feeding and the physical differences in the same ingredients of the milk of different species are of great importance, the preliminary question of how to get clean, fresh cow's milk is the fundamental one. It calls for knowledge on the part of the physician or sanitarian that can easily be conveyed to the farmer and dairyman. This is the first requisite in successful infant feeding.

Any one called on to feed an infant during the period it is normally nourished by its mother has a great responsibility thrust upon him, and one not to be assumed lightly or without preparation. Too many are satisfied when something that is retained in the stomach and causes a gain in weight, no thought being given to whether the food contains material out of which healthy tissue can be formed.

It has often been stated that an artificial food for infants should contain nothing that is not found in mother's milk, and that it should contain just what is found in mother's milk. To prove the suitability of various substitutes for mother's milk, chemical analyses of both have been published, to show how closely the substitutes approximate mother's milk. At first sight this seems a rational procedure, but when it is remembered that there is no difference between a diamond and a piece of charcoal, *chemically,* and that mixtures of butter, cheese, sugar, salts, and water, or of beef suet, raw beef, sugar, salts, and water can be made which, when analyzed by the usual methods, will show the same composition as mother's milk, the fallacy of judging the suitability of a food for an infant, or for an adult for that matter, by its chemical analysis *only* will be apparent. Physiological chemistry has not advanced sufficiently to make it a safe guide by itself.

In feeding an adult, it is only necessary to furnish enough food to repair waste. In feeding an infant, not only must waste be repaired, but material to build up new tissue must be supplied, or the infant can not grow normally. The whole future of the infant may depend on what kind of food is supplied it up to the

time it can take table food. Then the danger of an insufficient supply of tissue-building food is not so great.

The ability to resist disease depends largely on having the cells in which the vital processes take place plentiful in number and well nourished. These cells form a large portion of all the organs and tissues of the body, and, if the material to build cells is not furnished in sufficient quantity, the gain in weight, if there is any, will be mostly fat and water. It does not follow that because a baby is fat it is strong or healthy. The cells may be actually starving and so few in number that the body may be likened to a large, showy house, built with very light timbers, all ready to collapse under a slight strain.

All animals are alike in the chemical processes that take place within their organisms during starvation, and that the administration of digestible fat, proteids, or carbohydrates simply produces the same results in all kinds of animals. While chemically there seems to be no difference between the different forms of animal life, physiologically there are vast differences, and these differences seem to be closely related to the food supply; all the organs and parts of the body of a particular kind of animal being adapted to enable it to secure and digest its natural food. In the case of young animals which take milk, it has been shown that, not only does the milk of different species of animals contain practically the same food elements in varying proportions and forms suited to the needs of each particular species, but that the milks possess different curding properties that make them particularly suitable to their respective digestive tract, and that the process and order of digestion in the young animal are practically the same as those of the parent.

It has also been shown that, while the chemical composition of milks varies greatly, there is a type of composition for each distinct class of animals; also that the variations within these types are considerable, but that, in spite of these variations, each distinct type of milk has certain physiological properties that do not vary with the change in chemical composition or concentration of the

milk. For example, poor or diluted cow's milk has the same curding properties as the rich milk of cows. The selection of a food for any animal can not safely be made upon chemical analysis only, but by the aid of a digestive test. Some forms of proteid, even when digested, will not produce a healthy tissue, and there are certain combinations of the various food principles or elements that must be made to suit each class of animals. As the chemistry of the animal tissue, ingredients of milk, and different food is only in its infancy, and the functions of all the food elements are not thoroughly understood, it is useless to attack the problem of artificial infant feeding from the standpoint of chemistry alone, although a knowledge of food chemistry is of great assistance. What is needed is a knowledge of the substances that have proved to be able to support life and produce healthy tissue; how to combine and adapt them to suit the needs and digestive system of the infant, and how to spare tissue waste in disease by an alteration of diet. One of the great differences between woman's milk and other milks, which is well known, but which is not shown in analysis, is that woman's milk is richer in *lecithin*, which forms a large part of the brains and nerves. Within half an hour after birth, a calf, lamb, kid, or colt can stand, and in a day or two runs around and sees, hears, and smells about as well as its mother. In other words, it is born with a fully developed nervous system. A baby is very different in this respect, and it needs material for building up its nervous system, and this is found abundantly in woman's milk, but not so much in other milks.

The problem of feeding infants in all classes of society calls for ability to produce a satisfactory food in a simple and inexpensive manner. This necessitates a knowledge of raw food materials, how they are produced, and the best means of preserving them from deterioration and infection by disease or other kind of germs, and how these food materials, no matter what their source, may be best prepared for digestion by the infant.

THE TREATMENT OF ACUTE ENTERO-COLITIS.

J. W. SCOTT, M. D., HOUSTON.

The first indication in the treatment of acute entero-colitis is to empty the stomach and intestines. The stomach can be emptied by allowing the child to drink freely of warm water to which a little salt has been added or by means of the stomach tube. The former method, when effective, is preferable, in that it is much less disagreeable to the patient, and meets with less opposition from the family. When, however, it fails to empty the stomach thoroughly, which fact is made known by the unusual persistence of the nausea and vomiting, the stomach tube should be used.

The intestines can be cleared of their contents by means of a brisk purgative,—either calomel or castor oil. Calomel has the advantage of being easily administered, and not easily vomited. It also acts as an antiseptic, and hinders to a certain extent the further development of pathogenic micro-organisms. Castor oil is quick in its work and has a soothing effect upon the inflamed mucous membrane. In the great majority of cases, especially in those with an irritable stomach, I prefer the use of calomel. This initial purgation should be thorough; because, in addition to removing all irritating matter from the intestine, it sweeps out many bacilli and their toxins.

The bowels having been emptied, it is an almost universal custom to give some astringent and one of the intestinal antiseptics. As for the astringents, such as tannic acid, catechu, kino, etc., I believe they do more harm than good. They do harm by checking and deranging the natural secretions of the upper portion of the alimentary tract, and they do no good because they are decomposed and lose their astringent power before reaching that portion of the bowel where the main pathological lesions exist.

Those astringents like tannigen, which are supposed to pass

unchanged through the stomach and become decomposed gradually in the intestine, have been proven by clinical experience to be of no particular value. As for the socalled intestinal antiseptics, among which may be mentioned salol, salicylate of soda, napthol, and the various salts of bismuth, I am unable to see what benefit can result from their use. They disorder the stomach, depress the action of the heart, and irritate the kidneys, whose functional activity it is so important to conserve.

It should further be remembered that there are groups of bacteriæ in the intestinal canal which are not pathogenic, but, on the other hand, are necessary to our well-being. For instance, food stuffs are prevented from undergoing putrefaction by the fermentation of the carbo-hydrates caused by the bacillus lactis aerogenes and the bacillus coli communis. These organisms, therefore, protect the system from the autoinfection which would result from putrefaction in the small intestine. Besides this, they kill many pathogenic bacteria, which are taken in by the mouth, and pass unharmed through the stomach. What good, therefore, can result from intestinal antiseptics when, if effective, they destroy not only disease producing germs, but also those essential to health? Purgation, particularly with calomel, is the only rational method of disinfecting the intestinal canal; because, in addition to emptying the bowel, it stimulates the flow of bile, which is nature's antiseptic, and which is destructive only to pathogenic bacteriæ. For this reason in entero-colitis, especially in those cases attended with much fermentation, a mild laxative dose of calomel every three or four days will prove of distinct advantage to the patient. None of the intestinal antiseptics has been so popular with the profession as bismuth, which I believe is prescribed by all physicians at some time during the course of an entero-colitis. Such at any rate has been my practice, although I have never observed any benefit from the administration. As an antiseptic, it is the least effective, but the least harmful of its class. As an astringent, it has but slight, if any, power. In fact, long continued use of bismuth in large doses will frequently prolong a diarrhea instead of checking it.

After the stomach and bowels have been emptied, only one remedy has in my experience been of much service, and that is opium, which is to be given with great care. Its use is indicated to control the bowels when moving excessively, to relieve severe pain and tenesmus, and to procure the necessary amount of sleep. Of the various preparations I prefer the camphorated or deodorized tincture. Small doses, frequently repeated, until the desired result is accomplished constitute the best method of administration. Practically every medicine in the pharmacopœia has been at some time recommended in the treatment of acute entero-colitis, which is the very best proof that no medicine has much, if any, effect upon its course or duration. There are other remedial measures, however, not of a medicinal character, which will always prove beneficial.

In the first place, the patient must be kept absolutely quiet. The treatment of any inflamed organ is to put it at rest. This is just as true of an inflamed bowel as it is of an inflamed knee joint. In order to procure rest for the bowel, it is of prime importance to have the entire muscular system at repose. Nothing diminishes peristalsis so much as complete relaxation of all the muscles. This is amply proven by the fact that the bowels move less frequently at night when the patient is asleep than during the day. I believe children with entero-colitis are allowed to move about too much, and they are handled too frequently by sympathetic relatives, who, in their great zeal to be constantly doing something, scarcely allow the patient any time to be quiet. A child with this complaint should be put to bed in a well-ventilated room and kept there. When necessary to change its position for any purpose, it should be lifted and not be allowed to move itself. In addition to lessening peristalsis, this relaxation of the muscular system saves the child's strength, a point of vital importance in the treatment of the disease. An abdominal bandage is also of great service in the management of these cases. It acts as a splint to the underlying muscles, and thereby helps to keep the inflamed bowel at rest. It also keeps the skin warm and active, serving practically the same

purpose the jacket does in pneumonia. The bandage should cover the entire abdomen. It is best made from some material that is soft, yielding, elastic, and capable of being snugly adjusted to the parts.

The kidneys and skin should be stimulated to increased activity, and thus relieve the bowel of a certain portion of its work. The kidneys, skin, and intestines are the main emunctories of the body, and when either is inflamed the other two must be called upon to assist and to functionate for the diseased organ. For instance, in Bright's disease we stimulate the skin and bowels. In eczema we stimulate the kidneys and bowels. So in entero-colitis we should stimulate the kidneys and skin.

To increase the activity of the kidneys, I know of nothing better than drinking freely of ordinary pure water. If desired, some of the alkaline mineral waters like Buffalo Lithia may be used. To stimulate the skin, warm baths can be given at least once a day, preferably in the evening, when the patient's temperature is usually at its highest point. Cold baths are recommended by practically all of the authorities, but, according to my experience, the warm bath gives far better results; for it not only reduces the patient's temperature, but is unattended with shock, is more cleansing to the skin, and is conducive to a free flow of perspiration.

Another measure of great importance in the treatment of entero-colitis is irrigation of the colon, which can be done once or twice daily. Particular pains must be taken to prevent any overdistension of the inflamed intestine, for the stretching of its walls can only result in harm to the patient. The bag of the syringe should not be more than two feet above the child's body. Various medicinal solutions have been recommended for use, but the majority of physicians prefer the normal salt solution at a temperature of about 115 degrees. These irrigations serve to wash away irritating discharges and to keep the lower bowel cleansed. As a portion of the water is absorbed by the depleted blood-vessels, they also serve to stimulate the heart, to dilute the toxins circulating in the blood and to finally eliminate them through the kidneys and skin.

Now, in conclusion, a few words as to diet. In the beginning of entero-colitis there is usually great irritability of the stomach. While this continues that organ must have complete rest. Not even water is to be allowed. If the vomiting, however, persists for several hours, water must be given by the rectum to compensate in measure for the loss of the body fluids through the bowels. When the vomiting subsides, the patient can gradually begin to drink boiled or one of the alkaline waters. A little later, as the stomach becomes still more tolerant, panopeptone, or some such nutritive elixir, can be regularly administered, but no other food of any description should be allowed until all acute manifestations of the disease have passed. By acute manifestations I mean tympany, watery discharges and high temperature. When these symptoms have subsided, thin gruels and meat juices can be given with safety, and, as the patient convalesces, the normal diet may by slow degrees be resumed. Great care, however, must be exercised along this line for fear of relapses, which are very common in this complaint. I believe the most frequent mistake made in treating entero-colitis is improper feeding. Undigested foods are given when the digestive powers are in complete abeyance. Instead of nourishing the patient, such foods irritate the stomach, increase peristalsis, and ultimately ferment and decompose, thus adding to the existing autoinfection. The nearer the stomach and intestines are kept empty the nearer they approximate a state of physiological rest, which, in entero-colitis, is the prime object of all well-directed treatment.

DISCUSSION.

DR. H. B. HILL, Austin: With most of the doctor's paper I agree fully. The treatment which he has outlined might be termed the classical treatment. His method of giving calomel is not the plan I prefer. I prefer giving small doses of calomel, and more frequently. I would give, say one-tenth grain or one-twentieth grain every three hours. I think it is one of the best, and really the most reliable intestinal antiseptic that we have. I have also used castor oil. The hyposulphite of sodium seems to affect favorably the condition of the bowels, and I think it has some antiseptic

powers. The doctor said one thing that I want to dissent from. That is, his recommendation of opium. The opium treatment was formerly used universally. A few years after I graduated, we had a discussion on this very point, and it was the opinion of one of the physicians present that opium should not be used in these conditions. This started me to thinking, and I have watched the effects. I think it has a tendency to lock up toxins in the system. I have used less and less opium since that time.

DR. W. F. WEST, Waxahachie: I believe that after having cleansed the bowels thoroughly, then the use of opium with bismuth will soothe the lower bowel, the sigmoid flexure, and other parts. I believe that these are important points.

REFLEX IRRITATION FROM CONGENITAL PHIMOSIS.

J. C. ERWIN, M. D., M'KINNEY.

The importance of this subject can not be overestimated, because, when recognized, the treatment is both simple and effective. Add to this the fact that, by the neglect of early and proper treatment, irreparable damage may be done; an otherwise useful and happy life may be blighted and even lost. It may be an only son on whom a father's hopes are centered and a mother's happiness depends. I am persuaded that the neglect of the profession to fully appreciate this as a pathological factor in the production of many forms of neurosis is, in a large measure, due to the fact that a contracted and adherent prepuce in the early months of infant life is a physiological condition, and, as a rule, does not cause any trouble. Generally, during the first year of life, this becomes detached. Should this not occur, a true phimosis results. Even during this time it may become pathological and act as a source of irritation. As to how and why, many theories have been advanced, and the question is not yet definitely settled.

Reflex spasm of the arteries of the cord producing anemia, defective nutrition and consequent loss of muscular power, neuritis at the point of irritation and extending to the cord, inhibition of the cord centers from protracted reflex irritation producing exhaustion from repeated stimulation. The genital nerves being among the most sensitive in the body, the explanation of reflected results is simple. Fortunately, in the treatment of these cases, it matters not which of the different theories you accept as to why and how the damage is done. Your duty is plain and simple. Remove the cause, and good results will surely follow.

The irritation caused by phimosis and also by simple adhesions of the prepuce to the glands without contraction is not, in my judgment and experience, always in direct proportion to the extent

of contraction or adhesion. The rule is that we find more or less local evidence of irritation and sometimes inflammation caused by decomposing smegma and urine, hard lumps or inspisated smegma, and occasionally urinary calculi from the salts of decomposing urine. The absence, however, of this local evidence of irritation and inflammation does not preclude the possibility of serious reflex irritation. I have seen a complete paralysis of lower limbs lasting for three or four months from a simple slight adhesion of the prepuce to the glans penis, so slight as to go unnoticed by the physician in charge during these months of treatment, involving about one-fifth only of the circumference of the glans penis with easy and perfect retraction of the prepuce over the glans penis at every other point with no local evidence of irritation or inflammation. Simple detachment of this adhesion was immediately followed by improvement and entire restoration of normal functions. Again, I have seen very decided local irritation and inflammation with pinhole contraction of prepuce and no evidence of reflex irritation of the nerve centers. This being true, it would not, in my judgment, be a bad rule for the family physician to gently separate the delicate adhesion in all young male babies, then carefully instruct the mother as to how to retract the prepuce and as to the necessity of including these parts when giving the child its usual bath. This, I am sure, is too frequently neglected, and the neglect is directly and justly chargeable to the family physician. Uncleanness alone, in the absence of contractions or adhesions, is sufficient to cause considerable and serious irritation, tends to produce priapism, and, in older children, masturbation. No physician is justified in overlooking this as a possible element in disease. And, in every obscure case, the condition of the genital organs should be investigated. It would be difficult to limit or definitely mention the different forms of neuroses that may be directly traceable to this condition. Among the most common may be mentioned simple restlessness at night, choreic movements, paresis, feeble muscular action, defective nutrition, malassimilation, causing diarrhea or constipation, nocturnal incontinence,

dysuria, convulsions, epilepsy, paralysis, etc. It has been my pleasure more than once to see a puny, delicate, restless, irritable boy completely changed mentally and physically by proper attention to these parts. I will give briefly the history of a few cases in my work illustrating the different types of reflex irritation from this source.

Case No. 1.—Was called in consultation to see a child, age about 2 years, had suffered more or less at frequent intervals for past five months with diarrhea, was now suffering with severe attack of entero-colitis—duration two weeks. It had received careful and intelligent treatment as to diet and medical treatment, but was steadily progressing from bad to worse; very much emaciated. I found a contracted and adherent prepuce; advised that it be immediately stretched and separated from glans. No change in medical treatment. The result was immediate improvement and rapid restoration to perfect health. This experience has been many times duplicated in my work.

Case No. 2.—Age, 15 months. Mother gave the following history: For the past few months the child had been having from ten to fifteen involuntary actions from the bowels every twenty-four hours. Many different remedies had been used, but nothing seemed to give any relief. I found contracted and adherent prepuce, which I at once dilated and detached. Actions reduced during the first week to from three to six every twenty-four hours. Since that time have been in every way normal. No medical treatment.

Case No. 3.—Age, 5 years. Mother gave following history: The child had never had any serious sickness, was well developed and nourished, did not sleep well, and for past two years would occasionally have a slight spasm or "spell" as she called it, increasing in frequency in spite of treatment. Upon examination I found a contracted and adherent prepuce. I stretched and detached it at once. Patient slept well first night after operation, and has had no return of spasms.

Case No. 4.—Age, 5 years. Was brought to me from an adjoining town for examination and treatment. Father gave following

history: Child had never had any serious illness; commenced to walk at age of 1 year; well developed physically and mentally. The father stated that about three months before he noticed that the child would frequently fall. Did not seem to have good use of lower limbs. This condition rapidly progressed to complete paralysis of both lower limbs. I found slight adhesion of prepuce to glans; prepuce easily retracted except at point of adhesion, no local evidence of irritation. I separated the adhesions and the child returned to its home in four days perfectly restored.

The diagnosis of a contracted or adherent prepuce is, of course, simple. The relation of this condition as a causal factor in the production of reflex symptoms when present will require a careful study of each individual case. Be guarded in your prognosis, remembering that this may in some cases be only a contributory causal factor, otherwise you may overlook some serious brain or spinal lesion. Yet, however strong the symptoms may point to central lesion, in the presence of a contracted or adherent prepuce it should receive prompt attention, for in no other way can you definitely determine in many cases its proper relation as a causal factor in the condition.

There are three methods of treatment for the relief of this condition, either of which will give good results when considered from the viewpoint of removing the source of irritation. The condition present in each case must determine which of the three methods will best meet the indications.

1. Dilatation and stripping the glans.
2. Splitting the foreskin, and separating the adhesions.
3. Circumcision.

In my judgment, the choice should be made in the order mentioned. No case should be treated by the second or third method when the first method will accomplish the end desired. After an experience of many years, I am prepared to state that this method, if properly performed, will, in a very large per cent of all young children, accomplish the end desired and leave your patient in a perfectly normal condition with a prepuce moving freely over a

healthy glans. The foreskin was placed there for a purpose, and should not be removed when by a simpler and safer method the same results may be accomplished. Do not understand me to oppose circumcision when necessary. I consider it the proper method of treatment in selected cases. What I desire to impress is that in the vast majority of young children it will not be necessary. I know it has been advised from a standpoint of cleanliness, and for future protection against infection. Proper instructions concerning the use and benefit of soap and water is sufficient answer to the first; and the second, if it were true, which I very much doubt, does not appeal strongly to me, for I do not consider it the duty of the physician to prepare young boys for future immoral intercourse. When the indications for treatment are not urgent, and the prepuce much contracted, gradual dilatation is to be preferred, since it is important to avoid as much as possible any injury to the mucous membrane or skin. I will not detain you with a description of this simple plan of operation. Try it, if you have not, and you will be surprised at the results.

DISCUSSION.

DR. W. R. BLAILOCK, Dallas: The proposition laid down by Dr. Erwin, that irritation will cause reflex conditions simulating very serious diseases, is one of which there can be no question. I recall that in the last ten years, I have treated three boys above six years, who suffered from epileptiform attacks, and they were permanently relieved by dilatation of the prepuce, and the removal of the smegma which had collected behind the glans penis. I have also seen cases of older persons, who were run down, and imagined that they could never enjoy good health any more. who were relieved very promptly by the simple operation of circumcision. One case I remember particularly that gained twenty-five pounds in three months from the operation of circumcision. He had been under medical treatment for twenty-five years, and more was accomplished in three months by the simple operation of circumcision than had been accomplished during all those years. In a recent discussion before the McLennan County Medical Association, I took the position that it was not a normal condition when a child has adhesions to the prepuce. I took the position that the obstetrician should examine the prepuce, and see that it moves freely, breaking up any adhesions. Another physician, Dr.

Saunders of Waco, took the opposite view, claiming that adhesions of the prepuce in infants to be physiological. I would like to hear some expressions of opinion on this point.

DR. BLIEM, San Antonio: I am glad that Dr. Blailock brought this point out. I was going to ask the gentleman who read the paper his opinion as to the routine treatment of little boy babies. I have been in the habit of examining little boys at birth as to the condition of the prepuce, because so many times these conditions arise later. It is a question in my mind whether it is not really the duty of the obstetrician to examine and relieve these conditions. I have seen so many little boys get into trouble on account of these adhesions that I think they ought to be relieved at once as one of the routine measures. It would do no harm, and might save a great deal of trouble. I have for some time made it my practice to break up these adhesions where they exist before discharging the obstetrical case. I remember one case of a little boy upon whom I operated on the third day and an oozing set up which I was unable to control, and the boy bled to death. The mother was tubercular, had a hemorrhagic diathesis, and the baby was apparently a hemophiliac.

DR. WILLIAM KEILLER, Galveston: I do not think there is any doubt but that adhering prepuce is physiological, but that is no reason why we should not interfere. I think that wherever there are adhesions they should be separated. You can not possibly do any harm in doing that. In regard to hemorrhage, I had one case of hemorrhage in which all the usual methods for stopping the bleeding failed. I finally found a little vein, which I caught up in a horsehair suture, and thus stopped the bleeding. We are talking altogether about little boys, but how about little girls? These cases are just as common among little girls as among little boys. Mothers ought to be informed that when little girls attempt to touch the generative organs, there is some itching caused by adherent prepuce which should be separated. It is more difficult to manage the after treatment of girls than it is to manage boys. In girls you may separate these adhesions and they will frequently occur again.

DR. S. BURG, San Antonio: I would like to take issue with the opinion expressed that adhesions of the prepuce are physiological. I can not see why it is the case. The prepuce should slide forward and backward, and, when it will not slide over the glans, you will usually find adhesions, which I consider pathological. As to the procedure, I think it is only necessary to break up these adhesions by moving it back and forth. If the edge of the prepuce is inclined to become irritated, or is so narrow that we might call it a stricture, I think it would be best to resort to circumcision.

DR. HALBERT, Waco: I had a case of confinement who died of sepsis.

The only way I could account for her death was that her husband had phimosis and the foulest prepuce I had ever seen. I saw a case of epilepsy while in New York presented by Dr. Sayre with the statement that it had been relieved of epilepsy by circumcision. Afterward I saw the same case presented by Dr. Hammond, with the statement that it was not cured, but, if any difference, made worse by the operation. Both positions were sustained by statements signed by the father of the child. This much I know: phimosis is congenital. I think it is our duty to correct these conditions, which are abnormal. When we find a child with an attached prepuce, then that prepuce should be pulled back and cleaned thoroughly. I always look at the prepuce, and if I find that I can draw it back without much trouble, I draw it back and cleanse thoroughly, and instruct the mother to keep it clean. If it can not be pulled back and cleaned, then I think circumcision is the only safe course. My position is phimosis is normal, adhesions abnormal.

DR. H. B. HILL, Austin: This is a subject that has been attracting considerable attention. Some medical authorities state that the great majority of children have the adhering prepuce at birth, which they recover from without treatment in a few months. My own experience shows that we frequently find contracted prepuce, and it is often very difficult to properly cleanse these.

DR. ERWIN, closing: I do not believe that it is the duty of the physician to stretch the prepuce of each child at birth, but he should give the mother directions, advising her of the danger that may result from this condition, and instructing her that, when giving the child a bath, the prepuce should be well drawn back and cleansed. If these instructions are faithfully followed, no further attention will be necessary in most cases. I do not believe in violently stretching the prepuce, the inflammatory thickening following rapid dilatation to the point of rupture of mucous membrane is undesirable, and can be avoided in most cases by the gradual method. Another point that is well to remember: These reflex irritations are not necessarily in direct proportion to the adherent or inflammatory condition; a very slight adhesion may cause serious reflex symptoms. With early and proper attention to these cases, neither circumcision or stretching of the prepuce will be necessary. My experience covers several hundred cases, and all treated by dilatation with perfect results.

OCCIPITO-POSTERIOR POSITIONS, WITH SPECIAL REFERENCE TO AN UNUSUAL METHOD OF MANUAL ROTATION.

J. A. RAWLINS, M. D., EL PASO.

I have little that is new to offer on posterior positions of the occiput, yet by calling your attention to a method which I have recently used with marked success, and which I have rarely seen mentioned in our text-books, I believe you will be pleased, should you give it a trial in the next case of the kind that comes to your hands.

Labor is always harder and more tedious in occipito-posterior positions than in anterior. The first stage is prolonged, pains are irregular and often weak and infrequent, and, because of this, combined with faulty positions, dilatation of the os is very slow and incomplete. Hence the patient is often very much exhausted before the second stage of labor begins, and is in poor condition to undergo the tedious, hard labor which this stage and this condition usually entail.

The method that I propose is one that is mentioned in some text-books, but is not given the prominence that, to my mind, it deserves. But there is one important feature of the method about to be described, and to my mind the most important, that I have not seen mentioned in the text-books.

To become a successful obstetrician one must needs be a good diagnostician of position by palpation, a thing that is too much neglected by the average practitioner. For, by this means, the attendant is enabled to know what position the child occupies in utero several weeks before labor sets in; and, as "forewarned is forearmed," he is sometimes able to institute means that will convert a posterior into an anterior position. This may be accomplished by means of the knee-chest posture, having the patient

assume this posture for several minutes daily until the position is changed, or until sufficient trial is given to see that it will do no good. Again, one is sometimes enabled to change a posterior into an anterior position by gently pushing the anterior shoulder to the left and the posterior to the right in right occipito-posterior, and the reverse in left occipito-posterior positions. This, of course, by external manipulations, and is best done before labor has begun. Its success will depend in a large measure on the mobility of the child within the uterus. A small child, or a large quantity of liquor amnii, makes the maneuver much easier to perform. However, many times we are not called to the patient until labor has set in, or, perhaps, we have tried the above mentioned means without benefit; hence, we must look to other means for relief.

The amount of trouble we may expect in occipito-posterior positions will depend largely on the size of the child and the degree of flexion of the head. A small child will pass through a normal pelvis without giving much trouble, even though the occiput does not rotate to the front, for I have seen several cases end thus satisfactorily.

With the usual size child, in the ordinary pelvis, progress in labor in these positions will, other things being equal, depend upon the amount of flexion present in the oncoming head. In many cases, unfortunately, this is decreased, rather than increased, as labor progresses, until such a degree of extension obtains that spontaneous delivery can not take place.

Now it is especially in these persistent posterior positions that I believe this method of manual rotation is indicated above all others. And, too, I believe it could be used as a method of election, before cases become persistent, to a great advantage; that is to say, apply the method as soon as possible after labor has set in, not waiting to see what nature will do, in cases where you anticipate trouble.

Some authorities advise introducing two fingers into the vagina and pressing the sinciput upwards during pain in order to assist flexion, which, if complete, is one of the main factors in a spontaneous delivery. Should the occiput rotate to the front, as often

happens, the birth proceeds exactly as an anterior position. Many of the later authorities recommend the rotation of the head in these posterior positions by the use of the forceps placed on in the reversed curve, changing to the natural curve after having rotated the head sufficiently to admit of the usual application. While I have not tried this method, yet I believe it capable of great damage to both mother and child in any but expert hands, and even then may do damage. Some recommend the vectis, but I have had no experience with its use, and do not think it is used much by any one at present.

The chief contra-indications to manual rotation would be a tonically contracted uterus or a very tightly impacted head, but the former would be a more serious obstacle than the latter.

The first requisite for the performance of manual rotation is a dilated or dilatable os for, of necessity, nothing can be done unless the hand, or at least the half hand, can pass the os.

The patient should by all means be anesthetized, though it is possible for the manipulations to be done without an anesthetic. The patient is placed in the lithotomy position, with hips elevated so that gravity may assist in the pushing up of the head and body, and to lessen the danger of prolapse of the cord.

After cleansing the hands and the genitals thoroughly, the operator selects the hand opposite to the position that is present, viz.: left hand for right occipito-posterior and right hand for left occipito-posterior cases. However, the selection of one hand or the other is not so very essential, because most operators choose to use the hand that is best educated.

In a right occipito-posterior position, the left hand is introduced into the vagina, and into as much of the uterus as is necessary for the manipulations; the fingers grasp the occiput, while the thumb seizes the head near the left temple, so, that, at the proper time, pressure can be used to more advantage in rotating. With the head thus in the grasp of the hand, and with the external hand on the uterus to steady it and to assist in the manipulations, in the interval between pains, the head is gently pushed upwards

until it floats at the brim. It is then rotated to the left until the head reaches the opposite oblique diameter; that is to say, until it reaches the position of left occipito anterior. In rotating thus, the external hand assists by making pressure towards the median line on the external or uppermost shoulder. After attaining this position of left occipito anterior, the anesthetic is removed and the head is held in the position thus attained until pains sufficiently strong have come to fix the head in this new position. After it is fixed, the hand may be withdrawn and the case be allowed to proceed as any other anterior position.

If the membranes have not been ruptured, it is a good plan to rupture them with the first pains after rotation is complete, for, by so doing, the head becomes more quickly and surely fixed in the position desired.

Now, the unique and important feature of this method, and the one that gives it its effectiveness, differs from any method of rotation that I have seen described, in this: that the occiput is made to describe the half of a circle, from a posterior to an opposite anterior position, whereas others rotate but a quarter of a circle.

You may rotate a posterior into its anterior position of the same side, but with the next few pains it is nearly certain to assume its former position, even before you can apply forceps, which is the procedure recommended by some authorities.

With the other method the occiput can not possibly revert to its original position, nor can it change into a posterior position in its new location.

Now, in case labor can not be spontaneously ended in this new position to which the head has been rotated, you at least have your child in a proper position for the successful use of forceps, and have converted what might have been a difficult into a simple operative procedure.

There are three principal objections that might be raised against this procedure, but with great and proper care I believe they can be avoided. First, there is danger of uterine rupture, and this danger is in proportion to the mobility of the child within the

uterus; where the membranes are unruptured, or the child is freely movable, there is scarcely any danger.

However, in a tonically contracted uterus, unaffected by the anesthetic, I can see where the danger might be so great to both mother and child that the operation would have to be abandoned. But the earlier in the labor this operation is performed the less would be these dangers. Second, there is some danger of too great torsion on the child's neck in order to turn it in the half circle that it must pass in order to reach the desired anterior position; but I believe this danger is very slight, for the child's chest does not usually look straight to the front in these positions, but rather in the opposite direction to which the occiput points, so that the body does not have to rotate to the same degree as the occiput. A third, though not so probable a danger, might be a prolapsed cord, but I believe this danger to be very slight, and may be obviated to some extent by elevating the hips. Again, increased manipulations always increase the danger from sepsis.

In the cases I have delivered by this maneuver, the shoulders have passed through the pelvis in the right oblique diameter, so that when restitution took place the head occupied its former relative position of right occipito posterior.

Thus far I have had no opportunity of testing this method in a face or brow position, but I believe it offers the safest method of treating such cases. However, it ought to be done before the face or brow has become impacted. Make it a matter of election rather than one of necessity; however, in the case of such face or brow position, converting into complete flexion might be all that is necessary.

The ease with which this maneuver was performed, and the success it gave me in the cases I have tried it upon, have made me enthusiastic over it; and the desire to see it tried by others is my chief reason for presenting this paper.

I would like here to give an account of the first case of the kind that I ever tried this method upon. The later ones resemble it very closely, except that the os required manual dilatation in some

instances, and one case was rotated without rupturing the membranes.

Mrs. T. A., age 23; second labor. This patient was a healthy, well formed, robust woman, whose first child was extracted with forceps, with so much injury that it died before delivery was complete. The maternal soft parts also suffered considerable damage.

From all I can learn, I am confident that the same position, of right occipito-posterior, was present in the first, as in the second labor.

Labor began at 1 a. m. I first saw the patient four hours later, and diagnosed a right occipito-posterior position. At 8:30 the os was fully dilated and head well engaged. I waited an hour, and, as there was no further progress, I decided to rupture the membranes; but this procedure did not help matters, as I had hoped it would.

Although pains were strong and regular, the case made no material progress towards delivery. And as four hours had now elapsed since dilatation was completed, I thought it time to interfere; and another hour passed before I was ready to begin operations.

My intention was to apply forceps. The patient being properly prepared and anesthetized, I introduced my hand into the vagina and os to get the exact position of the head. While doing this it occurred to me that I might be able to push the head up and rotate it into a left occipito-anterior position; so, grasping the head with fingers and thumb, I gently pushed it above the brim and rotated it toward the desired position, at the same time using the external hand to push the anterior shoulder in the same direction. I was thus able to rotate the head into the desired position and left occipito anterior without any difficulty. The anesthetic was stopped, and the head was held in this position until a pain came on, when it at once became well engaged in its new position; and the child was born within ten minutes, even before the mother had recovered consciousness. The child was in good condition, and no

trouble whatever to either mother or child followed this procedure. The child was unusually large, weighing ten pounds.

The operation was so easily performed, results so prompt and satisfactory, that I resolved then and there to give the method further trial, which I have done to my entire satisfaction.

DISCUSSION.

DR. S. BUEG, San Antonio: I am heartily in accord with the method advised by Dr. Rawlings. I can state that about five years ago I read a paper before the West Texas Medical Association on the same subject and advised more or less the same method of rotation, a method which has given me excellent results compared with the other methods, like podalic version and the use of forceps or axis-traction forceps. The percentage of persistent occipito-posterior positions is much larger than usually given, as I at least find it. The occipito-posterior positions, which, after a long and tedious labor, are corrected by nature, are certainly more frequent than one usually assumes. These conditions can only be made out after a correct diagnosis, which, you will agree with me, is often not made. If the physician finds himself confronted with a long, tedious case of labor, where, after dilatation of the cervix progress is not made, the first important thing is a correct diagnosis of the position. I think the usual method of using two fingers for the examination is not sufficient. In such a case I advise to introduce the full hand; certainly under all modern antiseptic and aseptic precautions. If you are satisfied that it is an occipito-posterior position, I think something should be done, and be done right away. It is in mind a poor policy to wait for nature to correct the position. First, she may not do it; and, second, it would be cruel to let the poor woman suffer such agonies any longer. The method of rotation is the best. I have tried it time and time again. It is not so very difficult to put in the full hand and grasp the head and rotate it in the direction of the smaller part of the circle. The child usually rotates with it. But it is essential that the whole child should rotate and not the head alone. If the body does not follow the rotation of the head, it is easy to slip the hand up to the lower shoulder and rotate the body. There is very little risk in the operation, judging from my cases at least, as I had always had reason to regret it if I followed the other methods advised.

DR. J. F. Y. PAINE, Galveston: The operation explained is not original with Dr. Rawlings. It has been frequently used. Its description will be found in Grunden's book, recently published. The results of this rotation

must depend upon the ability of the operator. I do not quite appreciate the doctor's undertaking to do this operation before rupturing the membranes. I do not think that he could do this very well. I have done this operation myself, and have undertaken to do it at other times, and have failed absolutely. I think his enthusiasm will be chilled if he tries this operation very often.

DR. J. W. SCOTT, Houston: I agree in every particular with what Dr. Paine has just said. According to my experience the use of the forceps in occipito-posterior presentations is preferable to either manual rotation or podalic version. The great majority of such cases will terminate satisfactorily if left to nature. Attempts to rotate the occipito anteriorly in every instance is to my mind the very essence of meddlesome mid-wifery. It is far better to leave these cases alone until it becomes evident that interference is necessary; then the forceps can be applied, and a safe delivery usually effected.

DR. WILLIAM KEILLER, Galveston: I rise to endorse fully what Doctor Paine has said in regard to the dangerous character of the proceeding recommended. In occipito-posterior positions axis-traction forceps are particularly valuable.

DR. H. B. HILL, Austin: I will state that I had the misfortune to meet with four cases in one month during the last summer. The authorities say that this occurs about once in seventy cases. To have four cases in one month, two on the twelfth day of August, seems like going through an unusual experience. I used forceps on three of these cases.

DOES MATERNAL MENTAL INFLUENCE HAVE ANY CONSTRUCTIVE OR DESTRUCTIVE POWER IN THE PRODUCTION OF MALFORMATIONS OR MONSTROSITIES AT ANY STAGE OF EMBRYONIC DEVELOPMENT?

J. M. FRAZIER, M. D., PH. D., BELTON.

In scriptural times the theory that the offspring of animals were markedly affected by maternal impressions seems to have been accepted as true. I need only refer to the notable record in thirtieth chapter of the Book of Genesis, where the crafty Jacob made a lucrative and profitable deal with his too exacting father-in-law, Laban, the advantageous nature of which depended on the practical working of the theory of maternal impressions. You will readily recall how Jacob's herd of Hereford and Holstein and "ring-streaked and spotted cattle" grew in marvelous numbers to Laban's discomfiture.

A large majority of modern authorities on embryology and teratology indignantly deny that maternal impressions affect the offspring in-utero, destructively or constructively, and pronounce the dogma both unscientific and untenable.

Dr. George Jackson Fisher, one of the most distinguished American authorities on these subjects, takes this view, and I would refer to an elaborate and exhaustive paper by this author published in the American Journal of Insanity, January, 1870, and a later discussion by the same author in the Reference Hand-Book of Medical Sciences. I beg to quote a foot-note to the latter reference.

"The civilized world has made one long and progressive step in removing the origin and cause of physical malformation from the malign sphere of devils or of angry or unappeased gods, to the more controllable and less frightful metamorphosing power of the

unfortunate mother's mind, disturbed by ardent longings for innocent fruits, or by the sight, sound, or touch or even the dream of objects of disgust or affright. It is to be hoped that the *enlightened world* will soon make another progressive stride by relegating to the realm of pathological histology and to embryogenesis the explanation of anomalies of organization. Why should the anxious and sensitive mother be any more responsible for deviations from the normal fetal development than the unreasoning brute, the cold-blooded reptile, or the nerveless plant; all of which produce monstors identical in kind, in degree, and in variety?"

In my own experience and observation gathered in a practice of twenty-four years, I have seen so many and such marked evidences of offspring affected by maternal impression that I feel inclined to accept this as a true causative factor in many of the so-called *lusi naturae;* and, when the science of psychology can be made accurately applied to embryology, I believe it can be demonstrated to be both a tenable and a scientific hypothesis. I have observed many cases which seem to me to clearly demonstrate both the constructive and destructive effects of maternal impressions on the offspring in-utero.

I content myself for the present and on this occasion by presenting a report and photograph of a child which was brought into my office. The enlarged photo shows a healthy, vigorous, well-grown female child, two years and nine months old, with a perfect amputation of both arms at the middle of the humerus. There is an absence of both femurs or, if present, they are only rudimentary. Tibia and fibula seeming to articulate with a rather expanded pelvis and an absence of patellæ. The child walks and runs well and otherwise is well developed. The excessive development of the thighs marks striking resemblance to the posterior extremities or hams of a hog, and, when naked and reclining on back or sitting, the swinish appearance is at once apparent. The parents of this child are both healthy, vigorous, and prosperous middle aged people, they have four other children, all sound in mind and members. They do not know of any other case of congenital deformity of any

relatives on either side of family. On February 22, 1900, they lost by fire a large barn with contents, feed, machinery, and several very fine hogs, the mother at the time four months pregnant assisted in the efforts to extinguish the fire, and afterwards carried buckets of water and poured on the hogs, one of which had the legs burned from the body, leaving charred stumps. Aside from the excitement and shock at the time, she seemed to suffer no inconvenience, and continued well until the completion of the period of pregnancy. On July 15th, after a difficult labor, the child was born as the picture shows. The mother was very sick and confined to bed for five weeks, and says she "passed with and following the placenta many peculiar pieces of flesh, which were not like the after-birth."

If we accept the theory of maternal impressions as accounting for this child's condition, we must concede that there was not "an arrest of development," but an actual destruction or prenatal intra-uterine amputation of the upper extremities by some mysterious *vis naturalis* as well as a reconstruction of the lower extremities to form a resemblance to the strong mental impression made on the mother's nervous organism. For, at the advanced period of gestation (fourth month) at which this shock occurred, the extremities must have been fairly formed. The "how" and the "why" let the psychologist and embryologist explain. The fact and not a theory confronts us.

I hope at some future meeting to be able to present to this Association this unfortunate but interesting child, representing the physical effect of a mental evolution or rather reversion.

(*See Paper by J. M. Frazier, M. D. Ph. D., Page 498.*)

MINUTES

OF THE

THIRTY-SIXTH ANNUAL MEETING

OF THE

STATE MEDICAL ASSOCIATION OF TEXAS.

STATE MEDICAL ASSOCIATION OF TEXAS,

THIRTY-SIXTH ANNUAL MEETING.

MINUTES OF THE SCIENTIFIC BODY.

FIRST DAY—*Morning Session.*

AUSTIN, TEXAS, April 26, 1904.

The thirty-sixth annual meeting of the State Medical Association of Texas was opened in Austin on Tuesday, April 26, 1904, at the auditorium of the University of Texas.

Dr. T. J. Bennett, of Austin, Chairman of the Committee on Arrangements, formally opened the convention. Dr. S. H. Werlein, pastor of the Tenth Street Methodist Church, pronounced the invocation.

Dr. Bennett then introduced Mayor White, who, in a short but appropriate speech, turned over the keys of the city to the members of the Association.

Dr. R. J. Briggs, D. D., on behalf of the citizens of Austin, then welcomed the physicians in one of the most eloquent addresses ever presented to the Association.

Dr. F. E. Daniel was introduced, and, on behalf of the local medical profession, welcomed the Association in well chosen terms.

President W. L. Prather, of the University of Texas, welcomed the Association on behalf of the University.

Dr. Frank Paschal, of San Antonio, President of the Association, responded to the addresses in an appropriate manner.

The House of Delegates then convened in Room 70 at the Uni-

versity building, while the Section on General Medicine remained in the auditorium for section work.

SECTION ON GENERAL MEDICINE.

Walter Shropshire, Yoakum, Chairman.
W. B. McKnight, Mansfield, Secretary.

On Tuesday at 11 a. m., Chairman Shropshire called the Section on General Medicine to order. In the absence of the Secretary, Dr. McKnight, Dr. G. L. Davidson, of Wharton, was appointed to fill the vacancy.

The following papers were presented:

"Malarial Fever and Its Expense to the People," by Dr. Albert Woldert. Discussed by Dr. H. R. Carter, and Dr. Williams.

"How Insects Carry Disease," by Major Chas. F. Mason, U. S. A. Read by title and referred.

The Section then, on motion, adjourned until 2 o'clock p. m.

FIRST DAY—*Afternoon Session.*

SECTION ON GENERAL MEDICINE (continued).

"Some Observations on Malaria," by Dr. J. T. FitzSimon, Castroville. Discussed by Drs. Blailock and Woldert.

Dr. Reed, of Cincinnati, was here introduced and accorded the privilege of the floor on motion of Dr. J. F. Y. Paine. Dr. Reed made a short address.

"The Medical Side of Appendicitis," by Dr. R. T. Morris, Houston. Discussed by Drs. W. R. Blailock, S. Hertzog, Bacon Saunders, R. L. Dinwiddie, J. S. Wooten.

"The Signs and Pathology of Pleural Lesions," by Dr. A. E. Thayer, Galveston. Discussed by Dr. J. S. Wooten.

"The Nature of Therapeutic Energy," by Dr. J. W. McLaughlin, Galveston. Read by title and referred.

"Reflex Heart Troubles and the Necessity of Their Correct Diagnosis," by Dr. G. L. Davidson, Wharton. Discussed by Drs. J. W. Carhart and Williams.

Dr. C. N. McCloud, of Minnesota, was here, on motion, accorded the privilege of the floor.

"The Advantages and Use of the Microscope in General Practice," by Dr. J. W. McLaughlin, Galveston. Discussed by Drs. H. B. Hill, Walter Shropshire, T. E. Spaulding and W. R. Blailock.

At 6 o'clock p. m. the Section adjourned.

FIRST DAY—*Night Session.*

The Association met in the University auditorium at 8 o'clock p. m. The band of the State Insane Asylum began discoursing sweet music. Dr. T. J. Bennett, of Austin, in a few well-chosen words introduced President Paschal. Dr. Paschal, after acknowledging the introduction, read his annual address (see page 8).

At the close of the address by Dr. Paschal, Dr. H. A. Barr, of Beaumont, the orator of the Association, delivered the annual oration (see page 28).

At the close of the exercises in the auditorium, a general inspection of the different departments and laboratories of the State University was accorded members of the Association.

SECOND DAY—*Morning Session.*

SECTION ON STATE MEDICINE AND PUBLIC HYGIENE.

E. E. Guinn, Jacksonville, Chairman.
A. L. Hathcock, Palestine, Secretary.

At 9 o'clock the Chairman called the Section to order and read his address.

The following papers were presented:

"Incipient Insanity—Its Diagnosis and Treatment," by Dr. John Punton. Discussed by Drs. G. H. Moody, Williams, George A. Lee, and I. C. Chase.

"The Relation of the Public Schools to the Medical Profession," by Prof. Arthur Lefevre, State Superintendent of Public Instruction. Presented on invitation. Discussed by Drs. J. W. Carhart, A. E. Thayer, W. R. Blailock, H. C. Haden, Williams, Walter Shropshire, J. T. Moore, J. C. Loggins, A. Woldert, and S. C. Red.

"Tuberculosis in Our Public Institutions," by Dr. Jas. Greenwood, of San Antonio. Discussed.

"The Prophylaxis of Tuberculosis," by Dr. W. S. Carter, Galveston. Discussed.

"The Average Practitioner of Medicine on the Witness Stand as an Expert Alienist," by Dr. J. W. Carhart, Austin. Discussed.

"Why Do Our Physicians, Who Are so Often Appealed to, Not Respond," by Dr. J. B. York, Houston.

An adjournment was then taken until 2 o'clock p. m.

SECOND DAY—*Afternoon Session.*

SECTION ON MEDICAL JURISPRUDENCE.

G. H. Moody, San Antonio, Chairman.
T. F. Oates, Mexia, Secretary.

At 2 o'clock the Chairman called the Section to order in the University auditorium. Dr. Moody read the Chairman's Address, "A Resumé of the Year's Progress Along the Lines of the Modern Care of the Insane."

The following papers were presented:

"A Consideration of the Commoner Alcoholic Phychoses," by Dr. Joseph Collins, New York City. Read by title and referred.

"The Cause and Prevention of Rape—Sadism in the Negro," by Dr. F. E. Daniel, Austin. Discussed by Drs. J. W. Carhart, G. A. Trott, and others.

"Physiological Therapeutics in the Treatment of the Nervous and Insane," by Dr. J. S. Turner, Terrell. Discussed by Drs. John Punton and W. F. West. On motion by Dr. W. F. West, thanks were extended Dr. Turner for the paper.

"The Importance of Ample Provision and Proper Treatment for the Insane," by Dr. J. R. Nichols, Terrell. Read by title and referred.

"A Case of Paranoia," by Dr. M. L. Graves, San Antonio. Discussed.

"Some Aspects of Legislation in the Light of Modern Medical Science," by Dr. H. L. Hilgartner, Austin. Discussed.

"Degeneration—A Study in Social Pathology," illustrated with charts, by Dr. J. S. Wooten, Austin. Discussed.

"The Etiology and Elimination of Crime," by Dr. R. B. Sellers, Comanche. Discussed.

"Preventive Legislation in Forensic Medicine," by Clark Bell, of New York City, was read by title and referred.

SECOND DAY—*Afternoon Session.*

SECTION ON OPHTHALMOLOGY, OTOLOGY, RHINOLOGY, AND LARYNGOLOGY.

Joseph Mullen, Houston, Chairman.
Henry C. Haden, Galveston, Secretary.

In Room 80 of the University building, Chairman Mullen, at 2 o'clock, called to order the Section on Ophthalmology, Otology, Rhinology, and Laryngology. Dr. Mullen then read his Chairman's Address, after which the following papers were presented:

"A Case of Empyema of the Frontal Sinuses with Destruction of One Eye," by Dr. Bruce Richardson, Beaumont. Discussed.

"Sympathetic Ophthalmia," by Dr. W. A. Harper, Austin. Discussed.

"Abscess of the Brain Following Middle-Ear Inflammation, with Operation," by Dr. E. D. Capps, Fort Worth. Discussed.

"Report of a Case of Divergent Strabismus and Its Correction," by Dr. Henry C. Haden, Galveston. Discussed.

"Subcutaneous Injection of Vaseline for the Correction of Deformities," by Dr. H. L. Hilgartner, Austin. Discussed.

"A Review of Some Cataract Cases," by Dr. R. F. Miller, Sherman. Discussed.

"Treatment of Deafness with High Frequency Current," by Dr. H. L. Hilgartner, Austin. Discussed.

SECOND DAY—*Afternoon Session.*

SECTION ON DERMATOLOGY.

J. B. York, Houston, Chairman.
T. J. Pier, Brenham, Secretary.

The program called for the Section on Dermatology to meet on Wednesday afternoon at 2 o'clock.. When the hour arrived, however, it was found that the Section was lightly attended. Dr. W. F. West, of Waxahachie, read a paper on "Venereal Disease and Preventive Medicine." The Section then adjourned.

SECOND DAY—*Night Session.*

SECTION ON GENERAL MEDICINE (continued).

At 8 o'clock Chairman Shropshire called the Section on General Medicine in the University auditorium in special session. The occasion was for the purpose of having a symposium on yellow fever, headed by one of the world's greatest experts, Dr. H. R. Carter, of the United States Marine Hospital Service.

"Yellow Fever and Its Conveyance," by Surgeon H. R. Carter, of the United States Marine Hospital Service, was the first paper, followed by "An Outbreak of Fever in DeWitt County," by Dr. J. M. Reuss, Cuero. Next followed "Yellow Fever—The Laredo Outbreak," by Dr. J. M. Dinwiddie, San Antonio. These papers were discussed by Drs. Jno. T. Moore, J. P. Oliver, Frank Paschal, J. C. Loggins, W. J. Mathews, Williams, J. F. Y. Paine, E. Mellish, A. Woldert.

Section then stood adjourned until Thursday morning at 9 o'clock.

THIRD DAY—*Morning Session.*

SECTION ON SURGERY.

Bacon Saunders, Fort Worth, Chairman.
E. B. Osborne, Cleburne, Secretary.

On Thursday morning at 9 o'clock, Dr. Bacon Saunders called to order the Section on Surgery in the University auditorium. "The Early Routine Extirpation of all Neoplasms," was the title of the Chairman's Address.

The following papers were presented:

"Tuberculosis of the Shoulder Joint, with Radical Operation for Its Removal," by Dr. W. L. Allison, San Antonio. Discussed by Drs. J. M. Inge, Wm. Keiller, E. Mellish, J. E. Thompson, Bacon Saunders.

"A Plea for the More General Use of Ether, with Description of the Drop Method of Administration," by Dr. B. F. Stevens, El Paso, read by Dr. E. Mellish, in absence of the author. Discussed.

"Reflex Condition Complicating Kidney, with Report of Unusual Case Relieved by Operation," by Dr. J. M. Inge, Denton. Discussed by Drs. R. Caffery, S. C. Red, W. R. Blailock, O. L. Norsworthy, O. I. Halbert, Dunbar, H. B. Hill, Edw. Randall, I. C. Chase, E. Mellish, A. L. Hathcock, S. Burg.

"The Treatment of Exstrophy of the Bladder—A Successful Case of Transplantation of the Ureters Into the Sigmoid Flexure According to the Method of Maydl," by Dr. J. E. Thompson, Galveston. Discussed.

"Traumatic Lumbago," by Dr. S. C. Red, Houston. Discussed

by Drs. Walter Shropshire, S. Burg, Edw. Randall, R. T. Morris, M. Smith.

Adjourned until 2 o'clock p. m.

THIRD DAY—*Afternoon Session.*

SECTION ON SURGERY (continued).

A 2 o'clock Dr. Bacon Saunders called the Section on Surgery to order.

The following papers were read:

"A Simple Method of Anastomosis, with Report of Case of Gastro-Enterostomy," by Dr. A. C. Scott, Temple. Discussed by Drs. Blailock, M. Smith, Bacon Saunders, J. M. Frazier.

"Tumors of the Breast, with Special Reference to Their Early Recognition and Treatment," by Dr. M. Smith, Sulphur Springs. Discussed by Drs. S. C. Red, S. Burg, A. C. Scott.

"The Advantage of the Ferguson Operation in Hernia," by Dr. Joe Becton, Greenville. Read by title and referred.

Section on Surgery then adjourned subject to the call of the Chairman.

SECTION ON PATHOLOGY.

Wm. Gammon, Chairman, Galveston.
J. J. Terrell, Secretary, Galveston.

At 3:30 p. m. the Section on Pathology was called to order by Dr. J. J. Terrell, who, on account of the absence of the Chairman, acted in his stead.

The following papers were presented:

"Methods for Preparing Specimens to Be Sent to the Labora-

tories for Examination," by Dr. M. C. Schaeffer, Galveston. Read by title and referred.

"Immunity," by Dr. A. E. Thayer, Galveston. Discussed by Drs. H. R. Carter, J. E. Thompson, and J. H. Simpson.

"The Consumption and Elimination of Water in Moist and Dry Climates, with Special Reference to the Cause of Bright's Disease," by Dr. W. S. Carter, Galveston. Discussed by Drs. Spaulding, J. H. McCracken, W. F. West, H. R. Carter, J. W. Frazier, Wm. Keiller, and A. Woldert.

The Section on Pathology then stood adjourned.

SECTION ON SURGERY RECALLED.

Chairman Saunders recalled the Section on Surgery and completed the published program, as follows:

"The Anatomy of a Case of the Thyroid Gland, Illustrated by Casts and Specimens," by Dr. Wm. Keiller, Galveston. Discussed by Drs. J. E. Thompson, A. C. Scott.

"Amputation of the Hip Joint, with Report of Case," by Dr. W. J. Mathews, Austin. Discussed by Dr. S. C. Red.

"The Management of Club Foot," by Dr. R. W. Knox, Houston. Read by title and referred.

THIRD DAY—*Afternoon Session.*

SECTION ON GYNECOLOGY.

H. W. Crouse, El Paso, Chairman.
W. B. Russ, San Antonio, Secretary.

At 2 o'clock the Section on Gynecology was called to order in Room 70, University building. Dr. J. E. Gilcreest acted as Chairman owing to the absence of Dr. Crouse; and, as Dr. W. B. Russ

was engaged in the House of Delegates, Dr. R. L. Dinwiddie, of San Antonio, acted as Secretary of the Section.

The following papers were presented:

"Extra Uterine Pregnancy, with Report of Two Cases," by Dr. W. J. Mathews, Austin. Discussed by Drs. Wm. Keiller and J. E. Gilcreest.

"Report of Two Unusual Cases," by Dr. J. F. Y. Paine, Galveston. Discussed by Drs. E. J. Mellish and O. L. Norsworthy.

"Retrodisplacements of the Uterus," by Dr. E. J. Mellish, El Paso. Discussed.

"On the Superior Merits of a Modified Utero-Suspension for the Correction of Various Uterine Displacements," by Dr. Russell Caffery, San Antonio.

"Troublesome Diagnoses in Abdominal Work, with Report of Cases," by Dr. F. L. Barnes, Trinity. Discussed.

"Tuberculosis of the Uterus and Adnexa," by Dr. J. E. Gilcreest, Gainesville. Discussed.

"Hysterectomy as a Conservative Surgical Operation, with Report of Cases," by Dr. Jno. W. Kenney, San Antonio. Discussed.

"Subinvolution of the Uterus," by Dr. F. E. Young, San Antonio. Discussed.

"A Report of Two Cases," by Dr. O. L. Norsworthy, Houston. Discussed.

"Two Interesting Gynecological Cases," by Dr. H. A. Barr, Beaumont.

FOURTH DAY—*Morning Session.*

SECTION ON OBSTETRICS.

James Orr, Terrell, Chairman.
W. J. Pollard, Kaufman, Secretary.

Section was called to order at 9:30 o'clock in the University

auditorium. The Chairman being absent, the reading of his address was dispensed with. The program was as follows:

"The Underlying Principles of the Nourishment of Infants," by Dr. Jas. H. Bute, Houston. Discussed.

"The Treatment of Entero-Colitis," by Dr. J. W. Scott, Houston. Discussed by Drs. J. H. Bute, W. J. Mathews, and W. F. West.

"Reflex Irritation from Congenital Phimosis," by Dr. J. C. Erwin, McKinney. Discussed by Drs. Bleim, Wm. Keiller, S. Burg, Spaulding, O. I. Halbert, H. B. Hill.

"Does Maternal Mental Influence Have any Constructive or Destructive Power in the Production of Malformation or Monstrosities at any Stage of Embryonic Development?" by Dr. J. M. Frazier, Belton. Discussed by Drs. M. M. Smith, Wm. Keiller, I. C. Chase, J. D. Dorbandt, Thos. Taylor, H. B. Hill, J. F. Y. Paine.

"The Use of Diphtheritic Antitoxin in the Treatment of Laryngeal Diphtheria," by Dr. H. A. Burrows, New Boston. Discussed by Drs. J. W. Scott, Crossway, R. E. Moss, W. J. Mathews, Wm. Keiller.

The Section then stood adjourned until 2 o'clock p. m.

FOURTH DAY—*Afternoon Session.*

SECTION ON OBSTETRICS (continued).

At 2 o'clock the Section on Obstetrics was called to order. The House of Delegates entered the auditorium in a body, and the Section work was postponed. Installation of officers followed.

Dr. Frank Paschal, the retiring President, introduced the newly-elected officers to the joint session, the first being Dr. F. E. Daniel,

of Austin, President. Dr. Daniel acknowledged the honor in appropriate words.

Dr. C. E. Cantrell, Vice-President, was then introduced, and spoke enthusiastically of the future success of the Association.

Dr. Ira Carleton Chase, the newly-elected Secretary, was introduced and replied.

Dr. F. E. Daniel, acknowledging the gavel presented at the morning session by Dr. Paschal, replied in a happy speech.

Dr. W. R. Blailock, of McGregor, asked permission to speak to a question of personal privilege.

After a few happy remarks on the inspiration which Mrs. Daniel had proven to the newly-elected President, he placed her in nomination as Association Mascot, with the hope that the same vivifying influence on the Association would follow. Drs. Jackson and Foscue were appointed to escort Mrs. Daniel to the rostrum, where she gracefully acknowledged the honor.

Dr. Jno. T. Moore, retiring Secretary and newly-elected Vice-President, was then introduced to the Association and responded appropriately.

The House of Delegates then adjourned to meet again immediately in Room 70, University building.

SECTION ON OBSTETRICS RECALLED.

On the departure of the House of Delegates, the work of the Section on Obstetrics was resumed as follows:

"Occipito-Posterior Positions, with Special Reference to an Unusual Method of Manual Rotation," by Dr. J. A. Rawlings, El Paso, was, on account of the absence of the author, read by Dr. E. J. Mellish, El Paso. Discussed by Drs. J. F. Y. Paine, S. Burg, Jas. H. Bute, J. W. Scott, Wm. Keiller, H. B. Hill, and J. E. Gilcreest.

The Section then adjourned.

SECTION ON GENERAL MEDICINE RECALLED.

Chairman Shropshire of the Section on General Medicine called the Section to order.

The following papers were read:

"Pneumonia in Our Penal Institutions," by Dr. W. E. Fowler, Huntsville. Discussed by Drs. Spaulding, M. Smith, R. H. Harrison.

"Report of a Case of Malarial Cystitis, with Demonstration of Parasites in the Blood Cells Found in the Urine," by Dr. Robert Westphal, Yorktown. Discussed by Drs. Spaulding, M. Smith.

"The Use of Anti-Streptococcic Serum in the Treatment of Mixed Infections of Tuberculosis and Streptococci," by Dr. Otto Ehlinger, La Grange. Discussed by Drs. M. L. Graves, G. L. Davidson, Spaulding, S. C. Red, M. Smith.

The other Sections, which had not finished their labors, were in turn called, and papers not read in whole were read by title and referred to the Publishing Committee. At 6:15 o'clock p. m. the scientific work was brought to a close and an adjournment taken.

STATE MEDICAL ASSOCIATION OF TEXAS,

MINUTES OF THE HOUSE OF DELEGATES.

The preliminary meeting of the first House of Delegates of the State Medical Association of Texas, held at Austin, April 25, 1904, was called to order at 2 o'clock p. m. by the President, Dr. Frank Paschal.

Roll call by Secretary Dr. J. T. Moore showed a quorum present.

Discussion followed about seating delegates from county societies whose certificates had not been received in due form, and also about seating delegates from county societies that had not paid in full for all members reported on the official list. Matter referred to Board of Councilors for settlement.

The President ruled that all dues must be paid before the annual meeting, and that each society was responsible for the dues of each member reported on the official list, referring to Section 2, Chapter 9, of the State by-laws.

On motion by Dr. Cantrell, the President appointed the following committee to draft rules to govern the House of Delegates: Drs. S. R. Burroughs, Holman Taylor, T. J. Bennett, C. E. Cantrell, and W. B. Russ.

On motion by Dr. R. W. Knox, the House adjourned twenty minutes, after which the report of the Committee on Rules was read by the Chairman. After much discussion, the rules were adopted section by section, on motion of Dr. Cantrell.

On motion by Dr. Holman Taylor, the rules were ordered printed and distributed to members as soon as possible.

Adjourned to meet at the same place next day at 2 o'clock p. m.

April 26th.

Meeting called to order at 2 o'clock p. m. by the President.

Dr. A. L. Reed, of Cincinnati, Ohio, addressed the House in a

few well-chosen words, encouraging them in the work of reorganization, and assuring them of his pleasure at meeting them.

The President presented the following message and recommendations:

Gentlemen:

Since the last meeting of the Association, many changes have occurred. Death has entered our ranks, and claimed several of our most brilliant fellow members. Amongst them our esteemed Secretary, Doctor H. A. West. For thirteen years he served us with signal ability and aided in upbuilding the Association and the profession. This is not the proper time for eulogies; they will be spoken in season.

In beginning this message, my first thoughts were of my friend to whom I looked for guidance, but instead upon whose grave I sadly place the willow wreath.

The membership of the Association has increased from 360 last year to 2415. There are 125 county societies. The work of organization has been pushed energetically and intelligently by the councilors, officers, and friends of the Association. The success obtained is almost phenomenal, and is due to them. Only those connected with the work can estimate the amount of time given and the sacrifices made by these gentlemen. The Association has not only increased greatly in membership, but more interest by far is being displayed by the county societies in scientific work than ever before. The genuine benefits that will be derived by the Association of members in county society meetings will soon be manifested, and is bound to elevate the standard of our profession.

Dividing Scientific Work Into Sections With Separate Meetings.—The scientific and legislative bodies of our Association will be separated, thus giving more time to each branch. Owing to the increased attendance on the annual meetings, I recommend dividing the scientific work into sections with separate meetings. This would enable those interested in particular branches to attend the section of their choice, and give more time for papers and discussion than is possible under present arrangements.

Publication of Transactions in Book Form.—I recommend continuing the publication of the transactions in book form. I do not believe that establishing a journal of the State Association now for the publication of the transactions would be for the best interests of the Association or the profession. This is a question which should be very carefully considered. The present time is inopportune.

Collecting and Preservation of Records.—There are many valuable rec-

ords belonging to the Association scattered over the State. I respectfully recommend that efforts be made to collect them, and that the secretary be made their custodian. I also ask your consideration of the advisability of appointing a committee to collect papers and documents that form a part of the history of the Association, and having them published in book form. To defray the expense of publication, each county society should be asked to subscribe to one set of volumes, and also individual subscriptions be solicited. For several years the transactions of the Association were published in journal form, in Galveston. I understand that there are complete files of the Journals in existence. The labors of the members of this Association should always be conserved, and unless steps are taken the past work of many will be lost forever. The first volumes of the transactions are almost out of print. I think republishing them should be considered. There are many valuable and interesting papers that should be handed down to posterity.

Permanent Place of Meeting.—I respectfully recommend the consideration of a permanent place of meeting, and the establishment of a pathological museum and State medical library. From now on the annual attendance ought to increase, and it will be no little tax on the profession of the different cities to entertain the Association. Our meetings should be for scientific purposes alone, and not for social enjoyment.

Committee on Conference.—I also respectfully recommend appointing a Committee on Conference to meet with a like Committee of the Pharmaceutical Association of Texas, with a view of advancing the interests of both professions. The relations between the pharmacist and physicians should be better defined. Counter prescribing by druggists, refilling prescriptions without the doctor's consent, the reckless sale of coal of tar products, the open sale of quack nostrums, the too frequent insinuations made over the drug counter in reflections on physicians, are matters that should receive the attention of our profession. I believe much good can be done by a mutual understanding between pharmacist and physician, and pharmacy be elevated.

Illegal Practitioners.—I recommend that the county societies through the Committee on Public Health and Legislation shall comply with section 4, chapter 4, of the by-laws, which makes it a part of their duties to prefer charges against illegal practitioners and to see that county attorneys bring those who are violating the law to justice.

Better Pay for Physicians Employed by the State.—I also suggest for your consideration the advisability of the State Association urging the State of Texas to pay sufficient salaries to its health officers, and superintendents of eleemosynary institutions. Physicians acting for the State

and exposed to the dangers of infectious and contagious diseases should be well compensated for their services.

Insurance Examinations and Club Practice.—I also recommend for your consideration the appointment of a committee to confer with life insurance companies, and also to give attention to our profession contracting with benevolent and other organizations for services to members and their families at ridiculously low figures, and to take steps for correcting this evil.

Board of Health.—I urgently recommend your consideration of the necessity for a board of health. The time is ripe for Texas to have an efficient and well regulated one. I believe the public health and commercial interests demand it.

Institution for Care of Indigent Consumptives.—This is one of the most important matters concerning the public health. Humanity demands that proper accommodations and the very best treatment be given that helpless class, who are worthy of our deepest sympathy. The State should provide for them and aid in restoring to health and usefulness many who die for the lack of proper attention, and should in this manner prevent, as far as possible, the propagation of this controllable disease. I recommend that an active committee be appointed and continued until we are successful in securing an institution and an appropriation sufficient to equip it and to properly manage it, and that the committee be made a standing committee until this end is accomplished.

Committee on Public Health and Legislation.—I recommend that the presidents of the county societies appoint at once their committee on public health and legislation, in accordance with section 4, chapter 4, of the county constitution and by-laws.

Section on Railway Surgery.—I respectfully recommend creating a section on railway surgery, and that it be put on the same level with the other sections on scientific work. This is an important branch of surgery, and of interest to those doing general surgery and of special interest to the railroad surgeon.

Pure Food Bill.—I also recommend that the State Medical Association of Texas send a message to Senator Heyburn endorsing the Pure Food Bill, and also to our senators and representatives urging them to support Senator Heyburn's bill.

Regulating the Sale of Narcotics.—The objectionable features of the law regulating the sale of narcotics should receive your consideration, also the creation of a law requiring all patent drugs to give the formulæ on bottles and packages.

Amendment to the Law Regulating the Practice of Medicine.—The law

regulating the practice of medicine should be so amended so as to apply to all persons practicing the healing art regardless of their giving drugs. I recommend that the Association use its best endeavors in securing the amendment.

County Society Meetings to Be Encouraged.—My last, but by no means least, important recommendation is that the component county societies of this Association do not fail to carry out the purpose of their organizations; that they assemble monthly for the transaction of business, for mutual advancement by social intercourse, and the interchange of opinion on scientific subjects and on the topics of the day. Every exchange of thought broadens the mind and assists in the acquisition of knowledge. There is no one so humble that can not teach us something that we can use in our lives. Let us then feel that we have assembled today for the purpose of learning, to the end that the best interests of those who trust us with their lives and happiness are being conserved, and let us endeavor to inculcate this same purpose and spirit in every county society.

The President's recommendations were referred to the several committees on motion by Dr. Loggins.

The Secretary, Dr. J. T. Moore, read the following report:

SECRETARY'S REPORT.

I beg herewith to submit the report of the secretary, which will include the work of Dr. H. A. West, your previous secretary, now deceased, from the adjournment of the meeting in San Antonio and from my appointment, January 9, 1904.

Transactions for 1903—650 copies	$830.10
Postage on Transactions	142.62
Supplemetnary postage on 21 books, at 24c (unpaid)	5.04
Total	$977.76

Itemized statement of which is appended.

Expenses of the Secretary's Office from April 28, 1903, to April 26, 1904.

(See statement.)

I have deemed it best to purchase office equipment of a permanent character, so as to save time and expenses and increase the facilities for getting out work. The following is a list of furniture now in the office:

1 Walnut Case (four sections and base)	$13 50
1 Copying Press	5 00
1 Copying Book	75
1 Typewriter Stand	5 00
1 Bowl and Brush	55
1 Stamp and Pad	1 70
1 Globe Wernecke Outfit with Cards	44 15
1 Mimeograph	50 00
1 Letter File	2 80
1 Postal Scale	2 50
1 Pair Scissors	90

I advise that an addressograph be purchased, which will cost in the neighborhood of $100. This will enable the Secretary to keep the names of the members of the Association set up, and two or three thousand envelopes can be addressed in an hour or two. When one has a large permanent mailing list it is a waste of money to run the names off on a typewriter. The cost of addressing a thousand envelopes is about $2.50, and it will take at least a day to do it. Thus any circular of information to be sent out to our members will require about three days to do it.

Considerable expense in the way of printing is saved by an investment of $50 for a mimeograph, which we now have on hand. The office of the Secretary has no typewriter, and I would advise the purchase of a first-class machine for the Association.

There are now chartered 124 societies, with a membership of 2415. When the work of reorganization was begun, it was not expected by many that the membership would be more than 1000, while the more enthusiastic exponents of the reorganization plan placed the membership at 2000. To have passed this outside limit and to have brought up the membership to 2415 with 124 chartered societies is something far beyond our greatest expectations.

The better feeling that exists among the members of the various county societies is in itself sufficient reward for the efforts spent in the work of reorganization. The membership should be at least 3000 by the next meeting.

Upon our present membership basis we are entitled to five delegates to the meeting of the American Medical Association, and these delegates should be elected at this meeting.

The secretaries of county societies should read chapter 1, section 2, of the by-laws for county societies, and be governed accordingly. They must come to understand that the admission fee shall accompany the application for membership in a county society, and that the county society owes

the State Association $2 for every member elected into the county society. If secretaries allow members to be elected in any way, without payment of dues, it does not relieve the county society of the responsibility.

The office of the State Secretary looks to each county society for a complete list of its members on which to base the assessment. Much care needs to be exercised in the transfer of members from one county society to another; for unless proper credentials are given each member transferred much confusion will arise. It is recommended that the County Secretary make all remittances to the State Secretary direct and he can remit to the Treasurer. In order that the Secretary of the State society may have a complete report, it is also asked that the county societies send in a complete report of the deaths each year.

It is recommended that section 3, chapter 6, in the by-laws be changed to read: "He shall charge on his books the assessment against each component society at the end of the fiscal year, as furnished him by the State Secretary," and that section 4 shall read—the Treasurer—"all funds of the Association which come into his hands, and take his receipts for the same." It is also suggested that chapter 9, section 10, be changed to read "thirty days in advance of each annual session," instead of ten.

There are many details in organization and the carrying out of plans as set forth at the meeting in San Antonio that require an enormous amount of time and attention to perfect them. You will probably discover some discrepancies along some lines, but these have been unavoidable, as much of the time of the secretary has been given to carrying forward the reorganization work.

The following deaths have occurred:

C. H. Roberts, Wolfe City, Hunt County.

J. N. Garnett, Greenville, Hunt County.

H. A. West, Galveston, Galveston County.

W. P. Coates, Wills Point, Van Zandt County.

J. C. Jones, Gonzales, Gonzales County.

J. L. Hall, Crockett, Houston County.

U. H. Nixon, Temple, Bell County.

B. E. Hadra, Dallas, Dallas County.

The results obtained by the reorganization work have fully equalled the greatest expectations. The Councilors in the various districts have entered heartily into the work giving much of their time to the work and oftentimes neglecting their own business. Too much praise can not be given our Councilors as a whole for the magnificent work that has been done; for without the untiring energy that has been displayed but little would have been accomplished. Much of the credit for pushing this work is due

to your former Secretary, Dr. H. A. West, who never tired of doing whatever promised to advance the interests of the profession, and to push forward the work of reorganization.

I can not urge upon you too strongly the necessity of selecting the most untiring, zealous, wide-awake, and wisest medical men in the districts to carry forward the work so well begun. It is appreciated that a great deal of good can be accomplished, but there are many difficulties to be met in the future. There are still nearly 4000 doctors in this State who are outside of organization, and we must not stop until by all legitimate influences we have brought every eligible doctor into a county society, where such influences will be for the upbuilding of the profession. I think it would be well to continue such Councilors as have shown their ability to do their work well. They have become familiar with the work and can profit by experience.

A society in each Councilor district should be organized. In most districts there are serious difficulties to be overcome, owing to the fact that there are existing societies in these districts.

I would like to urge the necessity of each society purchasing the card index system for keeping record of its members. Most of the reports of the county societies are incomplete, and the Councilors should assist in systematically instructing the secretaries along this line. Reports for county societies should be closed and in the State Secretary's hands at least one month before the annual meeting, unless this is done, the Secretary will find it practically impossible to reach the entire membership with programs and other information.

Notice was given that all titles of papers should be in the Secretary's hands by April 1st, yet titles have been coming in ever since these requests were first sent out. I would advise having papers in the Secretary's hands at least sixty days before the meeting, so that the program can be printed and distributed thirty days before the meeting.

It was not deemed best to place each section in a special section room during the present meeting, as provided by the constitution and by-laws, but I think it will be well to do so at the next meeting. There have been quite a number of complaints about the position of papers and sections on the program, but the Scientific Committee have arranged the sections and subjects as it saw best for all concerned; and, if any injustice has been done anyone, it was not the intention of the committee, as we tried to show no partiality to any one.

I wish to thank the officers of societies, Councilors, and others for the uniform courtesies and hearty co-operation they have given me in this work.

I can not close this report without alluding to the great loss our society, the State, and the whole country has sustained in the death of Dr. H. A. West. Having been a student under him and a co-worker with him, no man can more fully appreciate than I the great sacrifices that he has made for the advancement of the medical profession. No one wished more than he to see the reorganization of the Association perfected, and it would have been a great comfort to him, I am sure, to know that we have come to the Austin meeting with a membership of 2415 and such enthusiasm as is manifested at this meeting. I feel that much of the credit of the reorganization work is due to him.

Respectfully yours,

J. T. MOORE, Secretary.

The Secretary's report was referred to the Finance Committee. The Treasurer, Dr. R. F. Miller, presented the following report:

TREASURER'S REPORT, APRIL 26, 1904.

B. F. Miller, Treasurer, in account with the State Medical Association of Texas.

Receipts.

Date.	Receipts.	Amount.
April 27, 1903	To balance on hand as per annual report	$ 1,378 65
26, 1904	Dues collected from members and county societies since last report	5,986 00
		$ 7,364 65

Disbursements.

Date.	To whom paid—	Amount.
April 27, 1903	By cash paid New York exchange, franchise tax	$ 10 00
May 1, 1903	cash paid H. A. West, Secretary's salary	300 00
1, 1903	cash paid R. F. Miller, Treasurer's, salary	150 00
1, 1903	cash paid Ella Devlin, stenographer, part on account railroad fare and board	63 15
1, 1903	cash paid H. A. West, delegate's expense American Medical Association	40 00
1, 1903	cash paid A. G. Agnew, Assistant to Secretary	20 00
1, 1903	cash paid Clarke & Courts, programs, balance	10 00
1, 1903	cash paid S. C. Red, expense to Dallas	10 00
1, 1903	cash paid transfer and express	1 00
1, 1903	cash paid telegrams to Drs. J. T. Wilson and J. W. McCormack	2 00
1, 1903	cash paid janitor and porters, Turner Hall	3 00
5, 1903	cash paid Treasurer's stationery	9 00
5, 1903	cash paid United States postage	10 00
22, 1903	draft paid H. A. West, stenographer	10 00

Date.	To whom paid—	Amount.
June 1, 1903	check paid Sherman Printing Co., circular letters for dues	1 75
1, 1903	draft paid H. A. West, stenographer	11 65
22, 1903	New York exchange bill, American Medical Association constitution, by-laws and charter	56 00
22, 1903	cash paid United States postage	5 00
22, 1903	check paid Clarke & Courts, Secretary's expense	26 85
24, 1903	draft paid H. A. West, freight and drayage	13 55
27, 1903	draft paid H. A. West, express and drayage	14 95
July 1, 1903	draft paid H. A. West, 3000 postal cards	30 00
1, 1903	cash paid United States postage	5 00
3, 1903	draft paid H. A. West, stenographer and express	21 40
8, 1903	draft paid H. A. West, express and postal cards	25 98
17, 1903	draft paid H. A. West	13 83
18, 1903	draft paid H. A. West, plates and express	9 85
27, 1903	draft paid H. A. West, express	15 20
Aug. 3, 1903	draft paid H. A. West, stenographer and express	32 80
7, 1903	draft paid H. A. West, balance to Ella Devlin, stenographer	50 00
13, 1903	check paid Clarke & Courts, paper, printing, etc., for Secretary West	112 55
14, 1903	draft paid H. A. West, express, etc	13 50
27, 1903	check paid J. H. McCracken, Councilor expense	21 73
27, 1903	draft paid H. A. West, express and postage	4 40
27, 1903	cash paid United States postage	5 00
Sept. 3, 1903	draft paid H. A. West, stenographer	50 00
7, 1903	check paid Clarke & Courts, Secretary's printing	16 10
7, 1903	check paid W. L. Hay, agent Treasurer's bond	10 00
21, 1903	draft paid H. A. West	3 00
Oct. 3, 1903	draft paid H. A. West, stenographer	30 00
10, 1903	cash paid United States postage	5 00
10, 1903	draft paid H. A West	3 00
14, 1903	check paid Clarke & Courts, Secretary's stationery	6 90
15, 1903	draft paid H. A. West, express	3 78
22, 1903	draft paid H. A. West, American Medical Association bill, etc	12 00
Nov. 4, 1903	draft paid H. A. West, stenographer	30 15
13, 1903	check paid Von Boeckmann, Schutze & Co., transactions and postage	972 72
16, 1903	check paid Clarke and Courts, Secretary's stationery	26 90
18, 1903	draft paid H. A. West, postage	2 00
Dec. 3, 1903	draft paid H. A. West, stenographer	30 00
3, 1903	cash paid United States postage	5 00
5, 1903	draft paid H. A. West, postage	2 00
14, 1903	check paid Clarke & Courts, Secretary's stationery	5 65
Jan. 4, 1904	draft paid J. T. Moore, stenographer	30 00
Feb. 3, 1904	draft paid J. T. Moore, stenographer	30 00
3, 1904	cash paid United States postage	5 00
12, 1904	check paid J. T. Moore, Councilor bill	62 75
Mar. 5, 1904	draft paid J. T. Moore, stenographer	30 00
11, 1904	exchange paid Secretary of State—Charter, 1904	10 00
April 4, 1904	cash paid United States postage	5 00
4, 1904	draft paid J. T. Moore, stenographer and express	34 29
15, 1904	exchange on 32 local checks since April, 1903	3 26
16, 1904	draft paid J. T. Moore, programs, etc	25 00
April 26, 1904	Total expenses	$ 2,569 08
26, 1904	Total receipts $ 7,364 65	
26, 1904	Total expenses 2,569 08	
April 26, 1904	Balance on hand $ 4,795 57	4,795 57
		$ 7,364 65

Supplementary.

The Treasurer begs leave to add that at the last annual meeting when the reorganization plan was adopted, and the new regime was begun, it was thought that collection of $5 per year from old members for 1903 dues would be difficult, and his instructions were to use his best efforts and at the same time avoid giving any offense that might hinder the proposed organization. Of course a long list of members went on for 1903 as delegates from county societies which had paid dues previous to the San Antonio meeting, and were entitled to representation. Such delegates received all the benefits of membership for 1903, and were exempt from dues.

Then a long list of old members took advantage of the coming order of things for 1904, and either delayed or declined 1903 dues; however, the Treasurer and Dr. H. A. West felt that they had done better than was expected. Several old members received 1903 Transactions who had not paid dues for that year, but Dr. West agreed with me that a few dollars spent in that way would in the end be better for the Association than to drop many old members and thus antagonize such members against the reorganization scheme. It had been ruled that such members as paid $5 for 1903-04 dues must again pay $2 dues for 1904.

The position was an awkward one, and we did our best to obtain funds to meet 1903 expenses, and at the same time strengthen the Association. Previous to this we had dropped those not paying. The large balance on hand at this meeting would indicate that our reorganization plan promises great things, and the Association is grateful to those who worked unselfishly toward this end. The Treasurer regrets that so many county societies sent in their dues at the very last moment, and hence he was not able to have his report as complete as usual.

It probably befits me to call the attention of the House of Delegates to the fact that our late beloved Secretary, Dr. West, always collected his salary of $300 in advance at the close of each annual meeting, and hence had been paid for the Association year, April, 1903-04. I should add that, as Dr. West's duties were more arduous for 1903 than ever before, he had no doubt earned more than he had been paid up to the time he relinquished his work in December. But I want merely to suggest that your honored body should arrange to compensate Dr. Jno. T. Moore for his work since he was appointed to fill Dr. West's unexpired term.

I want also to suggest that, in as much as the balance on hand is now larger than ever before, your body might consider the matter of raising

the bond given by the Treasurer from the present sum of $2000 to whatever sum your body may decide upon.

This addenda is respectfully submitted by your Treasurer,

R. F. MILLER.

The Treasurer's report was referred to the Finance Committee for auditing.

The following Councilor reports were then received:

REPORT OF CHAIRMAN OF BOARD OF COUNCILORS.

I beg to offer the following report on the work done by your Board of Councilors during the year ending April 26, 1904: On the morning of the second day of the Thirty-fifth Annual Session, President Red announced the appointment of the following Councilors to serve for one year, or until their successors were appointed: S. T. Turner, El Paso; P. C. Coleman, Colorado; D. R. Fly, Amarillo; C. M. Alexander, Coleman; W. B. Russ, San Antonio; A. E. Spohn, Corpus Christi; T. J. Bennett, Austin; Walter Shropshire, Yoakum; J. T. Moore, Galveston; B. F. Calhoun, Beaumont; Sam R. Burroughs, Buffalo; J. J. Robert, Hillsboro; J. H. McCracken, Mineral Wells; C. E. Cantrell, Greenville; Holman Taylor, Marshall.

This Council met shortly after its appointments, and organized with the following officers: John T. Moore, Chairman; W. B. Russ, Secretary; John T. Moore, W. B. Russ and Walter Shropshire, Executive Committee. At this meeting the limits of the fifteen Councilor Districts were defined, and, under the advice of Drs. J. N. McCormack and H. A. West, both of whom were present, the organization work for the coming year was planned. After the necessary copies of the constitutions and by-laws for the State and county organizations, stationery, and blank forms for applications, reports, etc., were received, the work commenced in earnest. Since that date it has been vigorously prosecuted in spite of the many formidable obstacles which have from time to time presented themselves.

Early in June the Executive Committee met in Houston and prepared a circular of instructions, which was distributed in due time, and which proved to be of much assistance to officers and members of county societies.

On January 5, 1904, Dr. Moore was appointed Secretary of the State Association to fill the vacancy created by the untimely death of Dr. West. Dr. W. B. Russ was then appointed Chairman of the Council, and Dr. H. B. Decherd of Galveston named to fill Dr. Moore's place as Councilor for the Ninth District. Dr. Decherd was made Secretary of the Board to fill the vacancy left by the promotion of Dr. Russ.

The results during the past nine to ten months of active work amply

testify to the zeal and enthusiasm displayed by a majority of the Councilors in prosecuting this great undertaking, but in this connection I desire to refer particularly to the hard work done, and the sacrifice of time entailed by some of the individual members of the Board. In reply to an inquiry as to the time consumed in the discharge of his duties as Councilor, Dr. Sam R. Burroughs of the Eleventh District writes:

"The time required to cover an almost continuous correspondence, including the preparation and mailing of circular letters and other literature, with the addition of one visit to each of nine counties and two visits to two counties, could very likely be compressed into two months, but the loss of this time in the manner in which it has actually occurred has operated to a greater loss of time to the Councilor."

Dr. Cantrell of the Fourteenth District reports: "I have spent about forty days away from home on organization work during the past year, during which time I have visited nineteen counties."

Drs. Fly of the Third, Alexander of the Foourth, and Calhoun of the Tenth, have lost from twelve to sixteen days each from their practice, and most of the others have suffered fully as much loss. These figures do not include the time devoted to keeping up with the enormous amount of correspondence, which in many instances has been practically continuous during the greater part of the entire year.

Briefly stated the results obtained are as follows:

Total number of counties organized during the year ending April 26, 1904, 175.

Number of county societies established, 129.

Total number of eligible physicians in the State (estimated), 4700.

Present membership of county (and State) organizations, 2378.

Number of eligible physicians in State not yet connected with organization (estimated), 2322.

Membership of State Association in April, 1903, 368.

Increase in membership during year ending April 26, 1904, 2010.

Per cent increase during year ending April 26, 1904, 546.

Much has been accomplished, but much yet remains to be accomplished. We have devoted our time during this first year to the work of establishing organizations in as many counties as possible. To our successors will be given the task of keeping alive and adding strength to the societies already in existence, as well as to that of multiplying the number of organizations. The success or failure of their efforts will depend largely upon the spirit and manner in which the county organizations receive their advice and meet their efforts at assistance. It is not to be expected that every member of every society will become an active and enthusiastic

worker, nor will the success and prosperity of the society depend upon the attainment of this much to be desired but never to be realized result. Fortunately the efforts of even one active and tactful man in a given county may easily be the means of building up a strong and enduring organization. If the delegate, for example, who it is presumed is at least one of the best informed men in his home county as to the merits of our present organization plan will use his influence to make sure that the Secretary and other officers and committees are frequently reminded of their official duties and responsibilities, more than one-half of the burden of the work will be lifted from the shoulders of the Councilors, and the result for good will be immediately apparent and, needless to say, most gratifying.

The future success of the county society will of course depend upon the efficiency of its offiers and committees, consequently we can not too strongly condemn the tendency now manifested in some counties to regard the matter of election to office in the light of an honor to be given as a tribute of respect rather than as a trust to be placed in the hands of active and energetic men.

This report would not be complete without reference to the invaluable advice and assistance received on many occasions from Doctor J. N. McCormack, Chairman of the American Medical Association Committee on Reorganization. The medical profession of Texas, as well as that in many other States, owes to Dr. McCormack and his associates a debt of gratitude which can not be over-estimated.

The following tribute to the memory of Dr. H. A. West copied from the resolutions of respect recently adopted by the Travis County Medical Society expresses fully the sentiments of the Board of Councilors:

"In the death of Dr. H. A. West the medical profession, not only of Texas, but of the United States, has lost one of its most useful and accomplished members; the State Medical Association an efficient and popular Secretary and staunch advocate and supporter of organized legitimate medicine, a defender of its ethics and champion of its highest and best principles, a friend and benefactor of the favored, a zealous and intelligent worker in the practice of medicine; the State of Texas an honorable, able and high-minded citizen; and the members of this Society, individually and collectively, a loyal friend and a pleasant and congenial companion. At the annual meeting of the State Association he will be especially missed. There will be one vacant chair which can not be adequately filled, and around which will ever cluster the fondest memories and most pleasant recollections of his strong and delightful personality. We deplore his loss more than words can express."—W. B. RUSS.

Report of Councilor of First District.

Dr. S. T. Turner said: I have organized one county society, El Paso, with 37 members in good standing. There are in all about 65 physicians in my district. About 50 of these are in El Paso, the others are scattered over nine counties. Nearly all of the eligible physicians belong to the El Paso County Society. There are several physicians who have applied for membership, but have been refused as they have not complied with the law governing their certificates.

Report of Councilor of Second District.

Dr. P. C. Coleman reported in substance that he had organized five societies in the Big Spring District as follows: The Jones-Haskell-Knox-King County Society with 18 members; the Taylor County with 18; the Nolan-Fisher-Stonewall County with 12; the Mitchell-Scurry-Kent-Dickens with 12; the Howard-Martin-Midland-Ector-Borden-Crosby-Lubbock-Glasscock County with 10. The organization of a district association I deem best to postpone. The following counties are unorganized, and have no physicians in them: Crane, Hockley, Cochran, Yoakum, Terry, Lynn, Garza, Gaines, Dawson, Andrews, Upton. There are approximately 135 physicians in this district; 71 are now members of county societies. Prior to organization but 11 belonged to the State Association.

Report of Councilor of Third District.

Dr. David R. Fly reported that he had organized the Potter-Dallam-Roberts-Hartley County Medical Society with 17 members; the Donley County Society with 6; Deaf Smith-Randall-Castro County with 9; Hardeman-Childress-Foard County with 10; Hale-Swisher-Floyd County with 9. This is a total of 5 organizations including 15 counties, 5 of which have no physician, and several of them with only two or three. Many of these are unable to affiliate with county organizations owing to lack of railroad facilities. There are 75 physicians in this district, 55 of whom are now members of county societies.

Report of Councilor of Fourth District.

Dr. C. M. Alexander reported that his district embraced 14 counties, 5 of them on the railroad the other 9 from 40 to 80 miles removed. Before reorganization, 7 physicians in this district were members of the State Medical Association. Four county societies were organized as follows: Brown with 20 members; Coleman, 16; Runnels, 14; Tom Green, 17; total 67. In the 14 counties there are 110 legalized qualified physi-

cians. Nine-tenths of these will soon be in line. Twelve days were consumed in my work. My expenses to date $28.82.

Report of Councilor of Fifth District.

Dr. W. B. Russ said: I have organized 10 county societies in my district, as follows: Bexar with a membership of 104; Comal with 6; Guadalupe, 11; Karnes, 14; Kerr-Kendall-Bandera-Gillespie, 20; Maverick, 5; Medina, 7; Val Verde, 6; Uvalde-Edwards, 11; Wilson, 11; total, 195. It is estimated that there are but 6 eligible physicans in the district not members of a county society.

The unorganized counties are: Atascosa, Frio, Zavala, Kinney, Dimmit and La Salle. In this sparsely settled section there are less than a dozen physicians, some of whom are not eligible for membership under even the broadest interpretation of the eligibility clause, and, of those who are eligible, not as many as five can meet at any given point without the sacrifice of from one and a half to two full days of time. It has been thought best to allow the physicians from the above named counties to hold membership in neighboring societies of their choice.

Report of Councilor of Ninth District.

Dr. H. B. Decherd reported in substance as follows: Dr. J. T. Moore, who preceding him in office, had already organized Austin, Waller, Montgomery, Harris, Galveston and Washington County Societies. Since appointment, Fort Bend and Brazoria have been organized. Chambers county is the only county unorganized. There are 230 physicians in the district; 173 affiliated with county societies, and 57 not members. Previously 61 were members of the State Association.

Report of Councilor of Tenth District.

Dr. B. F. Calhoun said: There are 14 counties in my district. I began the work of reorganization in July, and have organized the following counties: Jefferson with 22 members; Orange with 10; Jasper-Newton with 7; Hardin, 8; Sabine, 7; Shelby, 17; Nacogdoches, 10; Angelina, 15; Polk, 8. I could not organize San Augustine, San Jacinto or Liberty, there being only three physicians in the latter county. Out of 224 eligible physicians in my district, 110 are members of county societies.

Report of Councilor of Eleventh District.

After giving an outline of the methods pursued, Dr. S. R. Burroughs said: Often I had to organize with not more than a third of the resident physicians of the county. The approximate number of physicians residing

in the district is 259, making an average for each county of 25 and a fraction. The following counties have been organized: Leon with 21 members; Robertson with 7; Houston, 27; Trinity, 10; Grimes, 9; Milam, 27; Burleson, 9; Walker, 6; Madison, 9; Brazos, 7. The total membership in county societies is 132, or a little more than half of the possible number. I am now taking steps to organize a district medical society; an itemized account of expenses is herewith attached.

Report of Councilor of Twelfth District.

Dr. J. J. Robert said: I was appointed Councilor of this district in the place of Dr. W. C. Blailock. Out of 13 counties in my district, I have organized 8. There are about 285 physicians in the eight organized counties, and 160 are members of a society. In the five unorganized counties, there are about 100 physicians. I have visited some of these, and have done a great deal of correspondence, and have sent out some circular letters to the Central Texas Medical Association. I have not done as much as I would like to. My successor in office I believe will be able to report every eligible physician in the counties comprising this district as members of this Association by the next meeting.

Report of Councilor of Fourteenth District.

Dr. C. E. Cantrell reported that he found in the North Texas District 2000 physicians, six or seven hundred of whom are ineligible to membership. Forty days were consumed in this work, 1000 letters and 1800 notices were mailed. Nineteen meetings for organization or reorganization were held. Twenty-one societies were organized or reorganized; 19 organized by myself and 2 by Dr. I. C. Chase of Fort Worth. Rains county is the only county in the Fourteenth District unorganized, where few physicians reside. The total membership of these societies is 633 as follows: Johnson, 26; Hunt, 51; Dallas, 65; Kaufman, 45; Collin, 38; Tarrant, 41; Lamar, 40; Hopkins, 19; Van Zandt, 21; Delta, 25; Parker, 26; Grayson, 32; Fannin, 45; Denton, 30; Cooke, 25; Montague, 24; Wise, 22; Rockwall, 12; Hood, 7; Erath, 10. Notice of an amendment to the Constitution of the North Texas Medical Association has been introduced and was at the next meeting tabled before Dr. Cantrell reached the meeting. It is hoped at the next meeting to organize the North Texas as a district society. Dr. Cantrell attended a meeting of the Northeast Texas Medical Society at Sulphur Springs and secured the adoption of amendments to the constitution requiring members to belong to county societies.

Report of Councilor of Fifteenth District.

I feel that conditions throughout my district are markedly improved, and that an era of unprecedented prosperity is about to dawn upon the profession in this section. I have visited each of my 17 counties, some of them twice, and succeeded in chartering live societies in all but Franklin county. The district has a regularly organized legislative body, which will complete the organization of the District Association soon. I have been unable to secure accurate data concerning the number of legalized practitioners in the district, but a fairly good estimate places the number at about 400, and all these, some 240, are now members of county societies. My traveling expenses, postage and incidentals have amounted to $108.25, covering expenditures during 25 days of travel.

Councilor reports, on motion by Dr. Loggins, were referred to the Publishing Committee, and a vote of thanks extended to the Councilors for their earnest and self-sacrificing work.

The Councilor expense accounts were referred to the Finance Committee.

The Board of Councilors seated all delegates whose certificates had been received, regardless of form. County societies that had not paid in full for entire membership were allowed representation on the basis of paid membership.

Dr. J. T. Wilson, Chairman of the Judicial Committee, read the following report:

REPORT OF THE CHAIRMAN OF THE JUDICIAL COMMITTEE.

I regret to state that this committee is not able to bring in the report desired on account of the physical disabilities of the chairman.

It was the intention of this committee to bring in a trial of a bill for a Public Health Board for the State, but we found the matter so important that it would not do to bring in a bill until it is thoroughly studied, which will require at least six months. The probability is that the new committee will be able to bring in a report at our next annual meeting, but too late for the meeting of the next Legislature. If it were possible for the committee to get together and bring this report to the next Legislature, it would be a great thing, but we could not do so this time, much as we wished.

I beg to state that the Board of Medical Examiners will recommend

some amendments to the law, which will certainly increase the value and usefulness of their law.

This committee sent telegrams to the President of the United States, urging him to appoint a representative of the medical profession on the Panama Canal Commission.

J. T. WILSON.

Report referred to the Publication Committee.

On motion by Dr. Cummings, the delegates of each Councilor District put in nomination one candidate from their district for a member of the Nominating Committee, from these fifteen the following five were elected on ballot by the House of Delegates: Drs. W. R. Thompson, C. B. Foscue, T. T. Jackson, D. R. Fly, and W. G. Allen forming the Nominating Committee.

April 28th.

Meeting called to order at 10 o'clock a. m. by the President.

Reading of minutes of previous meeting dispensed with.

Motion made and carried that the rules adopted for governing the House be reconsidered. After much discussion, a motion to adopt the rules and an amendment to refer them to a committee were laid on the table.

On motion of Dr. Taylor, the House adopted the following order of business:

ORDER OF BUSINESS FOR HOUSE OF DELEGATES.

1. Call to order by presiding officer.
2. Roll call and announcement of result.
3. Reading of minutes of previous meeting.
4. Reading of President's message and recommendations.
5. Report of Committee on Arrangements.
6. Report of Secretary.
7. Report of Treasurer.
8. Report of Chairman of Board of Councilors.
9. Report of Councilors.
10. Report of Committee on Scientific Work.
11. Report of Committee on Public Policy and Legislation.
12. Report of Committee on Publication.
13. Report of Committee on Nominations.

14. Report of special committees.
15. Reading of communications.
16. Reading of memorials and resolutions.
17. Appointment of standing committees.
18. Appointment of special committees.
19. Unfinished business.
20. New business.
21. Election of officers.
22. Selection of time and place of annual session.
23. Adjournment.

Owing to inability of Drs. Turner and Garwood to serve on the Finance Committee, Drs. Newt. Long and J. C. Loggins were appointed to serve in their stead with Dr. Alexander.

Dr. Walter Shropshire presented the following report:

Report of Councilor of Eighth District.

Dr. Shropshire stated in substance that he had completed the organization of his district. As near as he could judge, there were 223 practitioners, of whom 210 were legalized, and of these 8 were irregular. Ten practitioners are illegal. 130 members are included in the county organization. There are 78 physicians that are eligible but not members of county societies. Nine county societies were organized with membership as follows: Fayette with 25 members out of a possible 41; Colorado with 15 out of 27; Victoria-Calhoun 10 out of 16; Gonzales 21 out of 33; Jackson 5 out of 7; Wharton 16 out of 22; Matagorda 7 out of 19; Lavaca 17 out of 37; De Witt 14 out of 21. The Wharton Medical Society was one of the most enthusiastic and efficient organizations. This county assisted materially in the organization of the Eighth District Medical Association, which is now in good working condition. In the beginning 30 per cent of the physicians of the district had not complied with the late law. All that were known to be reputable later complied. Attached is an itemized bill of councilor expenses.

Referred to Publication Committee.

Dr. J. H. McCracken reported as follows:

Report of Councilor of Thirteenth District.

I have no report prepared in detail. I have an expense account, however. There are thirteen counties in the thirteenth district. I have organized all the counties except one. All are making good progress. It was with

some difficulty that we were able to organize, but have so far succeeded in making good societies. I have only one county left, and I think it will be necessary to attach it to another.

Referred to Publication Committee.

On motion by Dr. Decherd, the House decided to elect delegates on the basis of present membership in place of membership in January, and request that the five be seated by the American Medical Association.

On motion, the delegates were not instructed as to the next place of meeting for the American Medical Association.

Pure Food Bill referred to Judicial Committee.

Communication from Bureau of Medicine referred to Judicial Committee.

Communication in regard to restricting the sale of explosive toys for celebrations filed.

Decided to send no delegates to Atlantic City to represent a State Medical Journal.

The Secretary was instructed to inform the Secretary of the Lone Star Medical Association that nothing could be done by the State Medical Association of Texas to affiliate them with the American Medical Association.

On motion by Dr. Moore, the House recommended the appointment by the President of a Memorial Committee of five to provide and conduct at the next regular meeting an hour and a half memorial service in commemoration of departed members.

The order of business was suspended, and Dr. T. J. Bennett read his report as follows:

Report of Councilor of Seventh District.

On taking up the work there were already 3 local medical societies in the district, Caldwell and Williamson County Medical Society and the Austin Academy of Medicine meeting occasionally, but not characterized with much enthusiasm. The Austin District Medical Society was in good working condition, meeting quarterly. Its membership was 82. Had been in existence for eighteen years, and at its last meeting expressed itself as ready to enter the scheme of organization as a district society. All of

the 11 counties in this district are organized except Blanco, where physicians are few and scattered. In the district there are 263 physicians. Of these, 177 have become members of county societies, leaving 86 who are not. Of the latter, 65 may be considered eligible, leaving 21 ineligible. Membership in the county societies is as follows: Caldwell 19 members, 5 not; Bastrop 17, 2 not; Lee 10, 8 not; Williamson 33, 25 not; Burnet 10, 7 not; Travis 52, 13 not; Hays 14, 7 not; Blanco 0, 6 not; Llano 8, 3 not; Mason 5, 5 not; San Saba 11, 3 not.

Report referred to Publication Committee.

On motion of Dr. Watson of Seguin, the Judicial Committee was requested to try to secure legislative action for the benefit of the Anatomical Departments of the Medical Colleges of Texas. In the discussion which followed the courtesy of the floor was extended to Dr. William Keiller, who spoke as follows:

Gentlemen, I want to begin by saying I appreciate this opportunity and thank you for the courtesy. What we want is to be of absolutely no expense to the State. We want a bill that will provide for having specimens of anatomy brought to our Universities. We should have a board for this purpose, to consist of the Professors of Anatomy and Surgery in all the Medical Schools of Texas, each school to have representation. This board is to keep its transactions open to be inspected by an attorney from the State. The board is to have the power to call upon all asylums, hospitals, and those who have unclaimed dead and have these allotted to the schools, providing no claims can be found, also travelers passing through who can not be traced, and have the power to have these bodies turned over to them, and to reach the undertakers and have them transmit bodies without any special charge, that is not to charge any more than the regular price for preparing bodies, and the anatomical board will make their arrangements as to the distribution of bodies in the different schools. Our schools are suffering for the need of anatomical specimens. In Galveston we have as much as we require, but can use more. I have letters from various physicians saying that they would like to come and take a special course in anatomy. I have to tell them that they can not do so, as we have not enough material for their use. My students need all that we have, and they could use more. If we had plenty of material we could let any man who wished to pay $5 for laboratory fee do so. We could give him a body to operate on and could even give special instructions.

As far as we are concerned, while we have a reasonable amount, we have them at the expense of the post mortem examinations. We ought

to have all anatomical material for anatomical purposes without going to the post mortem room, so that our students could watch a case in the ward and then go to the post mortem room and see what has been wrong. I have seen the best physicians wrong in diagnosis. I do not know where I have learned more than by living in a post mortem room. I do not want to say more. This is a statement of facts that we all know, yet nothing has been done to make any provision for it. This does not work a hardship to anyone, not even to the dead, and it is a cost to nobody. There has been a great deal of prejudice on the part of the Legislature in regard to such matters, and if the county societies will take this matter up and have their representatives do what they can for this bill, it will help to secure the safety of the people, their children and themselves.

Referred to Committee on Public Policy and Legislation.

Adjourned to 2:30 p. m.

April 28th, 2:30 p. m.

Roll call dispensed with.

Minutes of previous meeting read and adopted.

Committee on Publication recommended that Transactions be published as before, papers to be condensed, all unnecessary matter omitted, and in this way Transactions would not cost more than $1500 or $2000.

The Committee on Conference reported through its Chairman, Dr. W. R. Thompson, as follows:

REPORT OF COMMITTEE ON CONFERENCE.

Your Committee on Conference, to whom was referred the President's recommendations (1) to confer with a like committee from the State Pharmaceutical Association; (2) concerning the salaries of the health officers and superintendents of elecmosynary institutions; and (3) concerning examinations for life insurance companies and the rendering of services for benevolent organizations, etc., at ridiculously low figures, beg leave to report the following:

(1) It will be our pleasure, at as early a date as possible, to confer with a like committee from the State Pharmaceutical Association to consider questions of mutual interest and report the result of our conference at the next meeting of this Association.

(2) We respectfully recommend that the question of salaries of health

officers and superintendents of eleemosynary institutions be referred to the Committee on Public Policy and Legislation.

(3) The question of life insurance examinations and club practice are local and individual questions that do not properly come within the control of this Association.

Respectfully,

W. R. THOMPSON,
S. C. RED,
J. C. LOGGINS.

Report received and adopted.

Dr. T. T. Jackson read the report of the Committee on Preservation and Collection of Records as follows:

REPORT OF COMMITTEE ON RECORDS.

Your Committee on Records beg to recommend as follows: That a committee of three be appointed and instructed to proceed at once to the collection of all records, documents, papers, etc., and all such data, both ancient and modern, as may be regarded of service or value to this Association. And that they be further instructed to submit these documents to the care of some competent and responsible librarian of some public institution, where they will at all times be free to the inspection of members of this Association, and at the same time preserved and perpetuated, and constantly at the disposal of the State Association.

And in this connection your committee beg to further recommend that, whereas many of our great and beloved presidents of this Association have passed into the great beyond, and that comparatively little has been done to perpetuate their memory, in or out of this Association, to our posterity, we advise that this committee be instructed to collect and have executed suitable portraits of all our ex-presidents of this Association, and have them hung in the halls or rooms of some appropriate public building as shall be provided and determined by this committee.

And we further advise the continuation of this policy to our posterity.

Respectfully submitted,

C. M. ALEXANDER,
M. L. MOODY,
T. T. JACKSON.

Report received and adopted.

The suggestion by Dr. Moore that funds collected by county treasurers and due the State be sent to the State Secretary, was referred to the Finance Committee.

Dr. Moore and Dr. Bennett presented amendments to the By-Laws of the State Association. On motion, these were laid over for one day.

The question of Secretary's salary elicited remarks by Drs. Moore, Earthman, Jackson and Thompson. Dr. Moore was in favor of a salary of $1000 to $1200. Dr. W. R. Thompson opposed voting any change of salary at present. Dr. J. H. McCaleb thought the time inopportune; there was danger of swamping the treasury with finances in an unsettled condition. Dr. Cummings thought the Association too unstable to pay such a salary. Dr. Holman Taylor was opposed to setting a salary limit. On motion by Dr. Cummings the matter was tabled.

Dr. Holman Taylor offered an amendment to the By-Laws for County Societies, adding to the last sentence of Chapter 3, Section 4, the words, "He shall transmit to the State Secretary the annual dues of his society." Laid over for one day.

Dr. Bennett presented an amendment to the Constitution requiring the Secretary to mail programs one month before the annual meeting to every member of the Association. Laid over for one day.

Dr. Moore presented an amendment to Chapter 9 to read, "30 days in advance of the annual session." Laid over for one day.

The Committee on the Care of Indigent Consumptives reported as follows:

REPORT OF COMMITTEE ON CARE OF INDIGENT CONSUMPTIVES.

Your Committee would recommend (1) that a sanitarium for the care of incipient cases of tuberculosis be established and maintained by the State of Texas in some suitable location, where the climatic conditions favor recovery.

(2) That a hospital for the care of indigent patients suffering from advanced tuberculosis be founded in the same way in some central locality.

(3) We recommend the following gentlemen as members of an active standing committee to present these recommendations to the Legislature at its next session, and that this committee be continued until we are suc-

cessful in securing such institutions and appropriations sufficient for their maintenance.

P. C. COLEMAN,
D. R. FLY,
R. H. HARRISON, SR.

The report was received and recommendations adopted.

Dr. J. T. Wilson, Chairman of the Legislative Committee, read the following report of the Board of Medical Examiners:

ANNUAL REPORT OF THE BOARD OF MEDICAL EXAMINERS FOR THE STATE OF TEXAS.

The Board of Medical Examiners for the State of Texas begs leave to submit for your consideration the annual report of its work since the last meeting of this body.

As you, Mr. President, declined to be added to the list of recommendations at the last meeting, much to the regret of the other members, Dr. S. T. Turner, of El Paso, was among the recommendations and was appointed to fill the vacancy thus made, who with all the remaining members of the old Board were reappointed and qualified.

Three meetings of the Board were held during the year about to close, one in Austin June 15 to 18, 1903. The Board was reorganized and held an examination, at which 24 applicants presented themselves for examination, all white, among the number was one female. During the examinations one applicant was discovered grossly transgressing the rules and copying answers from a book, and was expelled. This man had previously been twice arrested for openly violating the law, heavily fined, and once imprisoned. Another applicant excited the suspicion of some of the members, was closely watched, and on discovering that he was suspected withdrew. Of the remaining 22, 14 passed successful examinations and were duly licensed. Eight failed to obtain the required average and were rejected.

The next meeting was held in Fort Worth October 13-16, 1903. A total of 35 applicants presented themselves for examination. Of this number 2 were females, one of whom made application to be examined for general practice and one for obstetrics. Two of the applicants were negroes, both of whom failed. Of the 34 applicants for general practice, 24 passed successful examinations, including the female, and were licensed. Ten failed. The one applicant for obstetrics passed a successful examination. It is proper to state in this connection that this woman was exempt under the law, having practiced obstetrics in the State for fifteen years, but was ambitious to possess a State license, and passed a very creditable examina-

tion, declaring that if she failed she would study for a year and again apply for examination.

The Board met for the first time during the year 1904 in Austin April 21st to 23rd. The Board not having finished its business is still in session during the meeting of this Association. The total number of applicants at this meeting was 97. The number for general practice was 93. The number for obstetric license was 4, 1 male and 3 females. The total number of females was 4. There were 8 negroes among the applicants. Of the whole number examined for general practice 56 obtained the required grade and were licensed. 41 failed. Of the 4 examined for obstetric license 3 passed and were licensed, all women. One, a man, failed. The female examined for general practice passed.

The following is the total number of licenses of every character issued since last report:

Whole number of applicants for license during the year	408
Number of applicants for permanent license by examination	151
Number of applicants for temporary licenses	15
Number of applications for obstetric licenses	5
Number of applications for license on diplomas	196
Number of applications for reciprocity license	42
Whole number of licenses issued during the year	333
Number of permanent licenses issued after examination	77
Number of temporary licenses issued	14
Number of obstetric licenses issued	4
Number of licenses issued on diplomas registered since 1891	196
Number of reciprocity licenses issued	42
Number who failed to pass the regular examination	74
Number who failed to pass the temporary examination	1
Number who failed to pass the obstetric examination	1
Percentage of failures during the year	50
Number of female applicants for the year	3
Number of female applicants who failed	0
Number of negro applicants	10
Number of negro applicants who failed	7

The Board remains in session at each meeting not less than four days. It requires a week to finish the work; three days, from 9 a. m. until 6 p. m. each day, for the examinations, which is hard work and considerable strain, all the fourth day and night, sometimes longer, to finish grading the papers of twenty-five or thirty applicants. Grading is commenced as soon as the first section is finished, and the members work on their

papers until midnight, sometimes after, each night until finished. Of course, it requires a longer time in proportion to the number. The work of the member does not cease when the regular meetings adjourn and papers are graded. There is a daily correspondence, though not as great as the first two years, yet occupying a considerable time. The examinations for temporary license, which are supposed to be as thorough as those at the regular meetings, require from two and a half to three full days. The work of the Secretary, while not as great as previously, will always be a stupendous task. His correspondence is much more extensive than other members', in addition to the work of registration, issuing licenses, etc. The Board finds it necessary to have three meetings each year to meet the demands of applicants. We beg to state that, while the situation in the professional ranks we believe to have been greatly improved and the beneficial effects of this law are beginning to be felt, there are yet some illegal practitioners in the State. One man who failed in his examinations before the Board in October, and who had been practicing illegally for some time previously, returned and in defiance of the law continued to practice. The case has, however, been taken up recently and is now in the courts. The law especially provides for the licensing of midwifery practitioners, but the osteopaths practice this branch without molestation. It need not be expected that people outside of the profession will take notice of an illegal practitioner unless it be upon personal grounds, hence it was and is the duty of members of the profession to report all violations to the county attorney or grand jury, but it being a duty only in a general sense, with not a semblance of compulsion, no one specifically authorized to do so, all hesitated to take such steps. Since the reorganization, and the organization of County Societies, there is a provision by which the members are clothed with authority for the proper execution of this law. The constitution of the County Society provides for "a committee on public health and legislation, whose duty it is to enforce and support the sanitary and medical laws in the county, to co-operate with the legislative committee of the State Association in all matters pertaining to medical legislation, and to prosecute quacks and medical pretenders in the county." It is hoped that these committees of the County Societies, invested as they are with the necessary authority, will be impressed with the importance of the duties which devolve upon them by virtue of their official positions, will take up the work with earnestness, ferret out every illegal practitioner in their respective counties and bring them to justice as the constitution and the law contemplates. This is one of the important measures of the organization and authorizes the committee to perform this work as a committee and not as individuals,

therefore there need be no hesitation. The records in the office of the district clerk will show who are legal practitioners. All illegal practitioners should be reported to the county attorney or the grand jury. The committee from some County Societies has taken up the matter and some prosecutions are now in progress. It seems strange that some men from other States, knowing there is a law governing the practice, will come to the State, select a location, open an office and offer for practice before investigating the legal side, and then appeal to the mercy of the Board, yet go on boldly defying the law.

Two years ago some amendments were proposed by the Board in its annual report and adopted by the Association. A strong effort was made to have them passed by the Legislature, but failed after a vigorous fight in the Senate. It is hoped and believed that by persistent effort the bill can be amended of some of its defects and made more useful. The Board therefore begs to recommend the following amendments to be submitted to the next Legislature for enactment, viz.:

Section 4. Amend by adding in the last line after the words "surgery and midwifery" the following: "the said boards shall each procure a seal which shall be the official seal of the boards."

Section 5. Amend by striking out the words "the seal of the State of Texas" in the last line and by adding instead, "the seal of the board granting such license."

Section 6. Amend by adding in line twenty-two after the word "character," "and that he or she is a graduate of a reputable medical school of recognized standing, requiring for graduation attendance upon not less than three regular sessions, of not less than six months each, in three separate calendar years."

Section 8. Amend by adding in line eighteen after the word "Territory" the following: "which has been issued at least one year previous to the time it is presented."

Section 8. Amend by adding in line twenty-five after the words "receive a license from the Board of Medical Examiners of Texas to practice in this State" the following: "provided that the medical laws and examining boards of such States grant equal rights and recognition to the licentiates of the boards herein created, and provided that the applicant has not previously been rejected by one of the boards of this State."

Section 8. Amend by adding after the word "midwifery" at the end of the section the following: "sixth, provided that all persons changing their residence to another county shall have their diplomas or licenses registered with the district clerk of said county with certificate of date of issue and previous record."

Section 13. Amend by adding in the fourth line after the word "imprisonment" the following: "in the county jail." And by striking out in the seventh of the same section (13) after the words "surgeon or midwife" the following sentence: "provided that the provisions of this act do not apply to persons treating disease who do not prescribe or give drugs or medicine," and add instead the following sentence: "provided that those persons treating disease who profess not to prescribe or give drugs or medicines shall be examined in all the branches provided for in this act except chemistry, materia medica and therapeutics."

With these amendments added the law would be much improved. To take every license to the office of the Secretary of State for the stamp of the State seal is inconvenient and adds too much unnecessary labor to the already arduous duties of the secretary, and the boards should have a seal of their own. There are very few States that do not require a diploma from every applicant who is admitted to examination. In simple justice to all concerned, and to our own medical schools, it is believed that Texas should require of all applicants for an examination to practice medicine that they be graduates of a reputable medical school. Nearly all schools now require a four years' graded course, the first two years being devoted to teaching the preliminary branches; even in the third year the student does not get the full benefit of all the practical branches and clinical instruction. It is known that many schools are lenient and often graduate some incompetent men. This requirement was contained in the original bill and eliminated in its passage through the House of Representatives. It was embraced in the recommendations last year, but was stricken out by the Senate committee to which it was referred. The amendment recommended in section 8 providing that the license presented from another State Board for a reciprocal license by this Board "shall have been issued at least a year previous to its presentation" is offered, for the reason that graduates of schools in some States with which this Board has been exchanging licenses without examination are apprehensive of this Board, and believing that examinations are less severe in other States, they go before such boards to avoid examination by the Texas Board. It is an unfortunate condition that will permit a Texas student who graduates at a school in another State who proposes to return to practice his profession and yet to be licensed by some other State board. Students at the schools in Missouri, in Kentucky, in Tennessee and Louisiana have written to this Board to know if they were examined and licensed by the boards in those States if this Board would accept such license without examination. If this amendment can be enacted, it will prevent the attempt of such applicant to be legalized in Texas through a

more lenient examination or grading of other State boards. The other amendment of this section provides for the reciprocity clause to apply only to those States who extend the same courtesy to Texas. It is not fair for Texas to license physicians, without examination, from those States who do not allow the same privilege to a Texas licentiate. The other amendment to this section, providing for persons changing their residences to have their licenses registered in the county to which they remove, is important and relieves such persons of much embarrassment and sometimes possibly of trouble. The amendment to section 13 by adding after the word imprisonment "in the county jail," prominent attorneys advise will make the section more complete. The other amendment to the same section is to strike out the sentence "provided that the provisions of this act do not apply to persons treating disease who do not prescribe or give drugs or medicine," and to provide for their examination in all the branches except chemistry, materia medica and therapeutics. The sentence which unfortunately exempts so-called Christian scientists, osteopaths, magnetic healers, rubbers, X-ray fakes, and all other such frauds, should be changed. It is doubtful, however, if it will be possible to have it eliminated from the law. This sentence was tacked on the bill in its original passage through the House of Representatives. It was this sentence that caused such a persistent contest in the Senate last winter and that prevented the enactment of the other amendments. There is much more hope of having it amended by requiring all these charlatans to pass an examination than to have it stricken out entirely, this accords with the opinion of Senators who favor the amendment, such a change would practically eliminate them.

Before closing this report it becomes a mournful duty of the Board to officially announce its great loss by death of the valuable services of one of its loved and honored members, Dr. John C. Jones of Gonzales, which occurred at his home at 2:50 p. m. on January 25, 1904. At the meeting of the Board in October last at Fort Worth, he was, as ever, present at his post of duty, apparently in his usual health and vigor, giving his attention to the work at hand with the interest he always attached to it. The news of his death, therefore, came as a sudden shock and caused profound sorrow. He was fully in accord with the importance and value to the State of the Medical Practice Act and supported it earnestly. He was loyal to the Board and ever ready to perform any duty assigned him with alacrity and efficiency, he was loyal to this Association and to his profession, which he loved. In his intercourse with the members he was always pleasant and genial, greeting each with a welcome smile and cordial grasp of the hand. At the business meetings he was alert, careful and always prompt to concur in and support any measure that he believed

was for the public good or for the interest of the profession. He was always on the side of right, a Christian gentleman, a loving husband and kind father, a firm, warm-hearted friend, a gallant soldier in the Confederate cause, a devoted and skillful surgeon on the battlefield and the hospitals in time of war, an able and faithful practitioner in time of peace, a patriotic, useful citizen, he will be missed by this entire State, by the community in which he lived and was loved and honored, his presence at the annual meetings will be missed by the older members of this Association, he is and will be greatly missed by this Board, and we beg to add our tribute to his virtues, to drop a tear upon his new-made grave and bedeck it with a wreath of immortelles.

The death of Dr. Jones left a vacancy in the Board, which was promptly filled by the Governor, who appointed Dr. T. J. Bell of Tyler.

The Board desires to tender its thanks to the Association as a whole and as individuals for many kindnesses, for its support and the interest manifested in the work, and pleads for a continuance of the same.

J. T. WILSON, President,
S. R. BURROUGHS, Vice-President,
M. M. SMITH, Secretary and Treasurer,
J. H. REUSS,
J. W. SCOTT,
J. H. EVANS,
D. J. JENKINS,
S. T. TURNER,
T. J. BELL.

Dr. J. H. McCaleb read the following report:

REPORT OF COMMITTEE ON PERMANENT PLACE OF MEETING.

We, your committee, report as follows: We do not recommend a permanent place of meeting, but we do recommend the establishment of a Pathological Museum and State Medical Library with a permanent home, to be known as the Permanent Home of the Association, and that a committee of five be appointed to solicit concessions from cities desiring the location of the museum and library, and to report to the next annual session of this House of Delegates.

Respectfully,

E. B. PARSONS,
J. H. MCCALEB,
P. C. COLEMAN.

The report was received and adopted.

The Chair appointed the following committee: Drs. J. W. McLaughlin, Bacon Saunders, W. R. Blailock, J. D. Osborne, J. K. Lankford.

The Secretary received a communication from the Medical Recorder of Shreveport, La. Communication filed without action.

A communication was read from Mrs. Kennedy, of Sour Lake, regretting her inability to attend the meeting. The Secretary was instructed to extend to her acknowledgment and the compliments of the Association.

Adjourned.

April 29th, 10 a. m.

Reading of minutes dispensed with.

The Nominating Committee made the following report:

REPORT OF NOMINATING COMMITTEE.

For President: J. E. Gilcreest, F. E. Daniel, W. R. Blailock.

Vice-Presidents: John T. Moore, C. E. Cantrell, Walter Shropshire.

Secretary: I. C. Chase.

Treasurer: R. F. Miller.

For Councilors: First District, S. T. Turner; Second District, P. C. Coleman; Third District, D. R. Fly; Fourth District, C. M. Alexander; Fifth District, W. B. Russ; Sixth District, H. J. Hamilton; Seventh District, T. J. Bennett; Eighth District, W. A. Rape; Ninth District, H. B. Decherd; Tenth District, B. F. Calhoun; Eleventh District, S. R. Burroughs; Twelfth District, G. B. Foscue; Thirteenth District, J. H. McCracken; Fourteenth District, M. Smith; Fifteenth District, Holman Taylor.

Delegates to American Medical Association: S. R. Burroughs, J. E. Dodson, Alternate; Frank Paschal, T. C. Whitehead, Alternate; J. T. Wilson, C. M. Rosser, Alternate; R. W. Knox, W. G. Jameson, Alternate; J. W. McLaughlin, A. C. Scott, Alternate.

Orator: J. D. Law.

Place of Meeting: Houston.

Respectfully,

G. B. FOSCUE, Chairman.

Balloting on the President resulted in the election of Dr. F. E.

Daniel. The remainder of the nominations submitted by the Nominating Committee were elected without change.

The newly-elected officers were escorted to the hall by committees.

President Paschal, presenting the President-elect to the House of Delegates, said:

I have the honor to present to you your new President, a man too well known to need an introduction: Dr. F. E. Daniel of Austin.

Dr. Daniel said:

Gentlemen: For the distinguished honor it has been your pleasure to bestow upon me, you have my profound thanks. To be President of the State Medical Association of Texas at any time is a high honor. It has been conferred annually upon one of our most distinuished members. Able, honored and beloved men in the past have presided over your meetings, and have done themselves credit and honored the Association. Their names, enrolled on our Temple of Fame, will endure so long as the Association maintains its integrity, and will forever live in the memory and hearts of its constituent members. But now that, under the stimulus of an awakened interest and reorganization, when a majority of the reputable physicians of this great State are enrolled under its new-flown banner, and thousands will annually answer to roll call, to be chosen by your votes to wield the gavel of authority and preside over your deliberations, is indeed an honor of which any man may well be proud. Indeed, the poor words at my command are inadequate to express my sense of it. I can only say that I thank you.

The love of approbation is inborn in us, in all creatures, I believe. An approving conscience is itself a pleasing reward for duty done. The approbation of those you serve is very dear. If your child does an act he considers meritorious, he expects a pat, and is heart-broken if instead he be reproved. Your dog even covets your kind approbation, and is disgusted with a kick. I can not, and would not if I could, divest myself of the belief—the hope—that, in crowning the closing years of my life with this wreath of laurel, which to me comes like a benediction, you have been actuated by a realizing sense and appreciation of the services I have rendered, and steadfastly, despite discouragements, have tried to render to the cause of legitimate medicine, organization, the public health, and a pure and exalted standard of professional character. For twenty years I have done my best by word and pen to promote this cause, and, much

or little, the results have been the outcome of the strong will and earnest endeavor. Doubtless some of the seeds sown have fallen in good soil and will bear fruit. This belief is very sweet to me. It must be that for this you have honored me, for I have no other merit.

Gentlemen, you have known me, many of you, twenty-odd years. You know that there have been times when I have strongly antagonized the Association in certain matters, and doubtless contributed to the defeat of some of its aims. Whenever it has seemed to me that the Association has made a mistake, or, tacitly at least, sanctioned conduct or language on the part of those who should have been exemplars of better things, I have been outspoken in condemnation of such course. I will not be more specific; the older members know to what I allude. This earned for me the reputation among the unthinking of being a kicker, an element of discord, and some in their wrath went so far as to call me an enemy of the Association. Ah, those gentlemen forgot how earnestly I had worked for its upbuilding, and the personal sacrifices I repeatedly made for the sake of harmony! To allude to only one instance: I resigned the office of Secretary, which then paid $500 salary with a five years tenure, to appease a dissatisfied minority. I was elected and re-elected, but declined to serve, and the will of the majority was thwarted that there might be "harmony." It may sound boastful, my brethren—let it. But it requires a high order of courage of a certain kind to do one's duty as he sees it, at the expense of personal popularity, influence, prestige and money. This I have done. I have fearlessly advocated what I believed to be right. I have hewed to the line, regardless of the chips and of myself. I thereby antagonized influences that were powerful, losing friends and money. I have taken thousands of dollars out of my pocket by the course I have felt to be right and pursued. In all that time I had, however, the encouragement and support, moral and financial, of a host of attached and loyal friends—God bless them—the Old Guard I call them, who held up my hands and Amelik has not prevailed against me. They said I was right, and stood by me. My heart goes out in gratitude to them, one and all, and I love them. And I believe, and am happy in believing, that there is not among you today an unprejudiced man, acquainted with all the facts, who will say that I was not right. Your action today in calling me to the high office of President attests it, and I am amply repaid for what I have suffered and lost; for being misunderstood, misrepresented, maligned and even persecuted by those and their friends who fell under the lash of merited and just denunciation.

Early wedded to the profession of medicine, I have devoted forty-odd years of my life to its best and highest interests. A pupil before the war

of the immortal Flint and the great Fenner, I was early inspired with a high ideal of what the true physician should be. That ideal has ever been before me. Like the banner "Excelsior," it has ever stimulated me to go higher. Not "'mid snow and ice" have I borne it aloft, but, through adversity and opposition and persecution, I have never lost sight of it. Like a beacon light it has ever beckoned up and on. By tongue and pen the rising generations of doctors have been cheered and urged to strive for its attainment, and I have denounced all conduct in conflict with it, quackery and shuffling in high places and in low; and so long as God gives me the strength to strive for this and other laudable ends to which so much of my life and my best efforts have been devoted will I continue to stimulate and encourage the young doctor to realize in his life and conduct the highest type of the true American physician.

And here let me say that the great and grand body of learned men we call the medical profession, of which each of you is a working unit, is a power for weal or woe according to its work. Its integers degenerate into quacks sometimes. The "fakir" and patent medicine man, the advertising "regular" are most frequently degenerate physicians. They can say maybe: "Once I was pure as the snow, but I fell; fell like a snowflake from heaven to hell!" The tendency to this degeneration to quackery and disgrace must be checked. The unstable must be encouraged and strengthened. They must be brought into the fold, and incited by precept and example to a high and honorable life. And, gentlemen, not all of you perhaps have a full and realizing conception of the scope and extent of your duties or your influence, individually and collectively, for good or ill. Your all-duty is not done when you have conducted a case of illness or injury to a successful termination; brought a child safely through the shoals and shallows of childhood—past measles, mumps and diphtheria—or steered both mother and babe through the perilous straits of parturition. Your responsibility does not terminate there. Have you a conception that the organized medical profession is a strong factor in world politics, and may measurably give direction to and shape history, or contribute to changing the map of the earth? This may seem far-fetched, but it is true. You should be the mentors of every family where you practice. You should teach them sanitation, the laws of hygiene, temperance and cleanliness; how to avoid being sick. You should watch those at whose advent into this breathing world you have assisted, and see that his or her potentiality is developed; that the best in him shall come out. Watch him through boyhood and school and youth and adolescence, warning him against all those things that make for evil and decay; for the fittest survive in nations as in species and individuals. And that nation is the fittest, and

in the world-struggle for existence will survive, whose units are the healthiest, the wisest, the strongest and the best; and, gentlemen, you are measurably responsible for the result. The medical profession should be the guardians of the public health; for upon its preservation and protection depend the wealth, strength, success and perpetuation of the State and nation. Behold the diminutive race of islanders coping successfully with overwhelming semi-barbarians! It is because of their temperance, abstemiousness, cleanliness and an intelligent use of the life essentials—water, sun and air—that they have the clean, keen intellect and the wonderful powers of endurance. Medical men should be the mentors, too, of the schools—those *foci* whence are disseminated the seeds of infection into thousands of homes. Do you all appreciate your responsibility for this and understand that you alone can advise and direct the formation of measures of protection and the passage of laws for their enforcement? The day is at hand when our lawmakers will be glad to have your advice as to sanitation, now recognized as so fundamentally essential to national prosperity. So mote it be.

Again, I thank you.

In retiring from the Presidency of the State Medical Association of Texas, Dr. Paschal said:

Gentlemen, in retiring from the Presidency of this Association, I extend my sincere thanks to each member of this body for their consideration and courtesies. Any shortcomings or mistakes that I made were not from the heart, but from the head.

I have a gavel that I wish, through you, Mr. President, to offer to this Association. It is of little intrinsic value. It is made of wood taken from trees growing on historic ground. Part of it is from a tree whose boughs sheltered Ben Milam and his noble band of Texas heroes. It is from the place where from November, 1835, until the 4th day of December, 1835, the Texas troops were encamped. They were besieging the Mexicans in San Antonio, who greatly outnumbered them. Orders were given by General Burleson to fall back. Upon hearing this the brave Ben Milam stepped forward and said, "Who will follow old Ben Milam into San Antonio?" Three hundred and one of as brave men as ever lived volunteered. On the 5th of December the assault on San Antonio began. The troops were divided into two columns, one under the immediate command of Ben Milam. They advanced in parallel lines down Acequia and Soledad Streets, only one block separating them. So stubborn was the resistance and so fiercely contested, every foot was gained by hard fighting, and, though only separated by a short block, it was impossible for the

columns to form a union until the 28th of December. Just as victory crowned Ben Milam's heroic deed, he fell dead, shot through the brain. But he still lives in the hearts of every true American, and will never die so long as pen can write or tongue can speak.

The other tree is a large pecan, which in the early days of Texas marked one of the outposts of San Antonio. It was known as the "sentinel tree." In it were stationed sentinels who watched for the enemies of Texas, and helped to make this great inheritance of ours possible. On one of the bands of this gavel is inscribed: "Sum excubitor veritatis, sanitatis, humanitatis." "I am the sentinel of truth, health, humanity." On the other band is inscribed: "As I sheltered sentinels for Texas liberty, so will I guard this Association." And now, Mr. President, I place it in your hands, knowing that you will use it justly, and that you may ask the Association to honor me by accepting it and making it the official gavel of this Association. If they will do this, my only stipulation is that it shall be held in custody by each succeeding President, and be handed from President to President, which I hope will be done for hundreds of years to come.

DR. JOHN T. MOORE: I move that this gavel presented by our retiring President, who has so fully carried out the motto inscribed thereon, be accepted by this Association with the heartiest thanks of this body. Further, that we deliver it to his worthy successor, who shall be its custodian, and that we pledge to him the same hearty loyalty that has been given our retiring President; and, further, that Dr. Paschal be asked to give his address for the Proceedings.

Carried.

DR. PASCHAL: Gentlemen, I can only say that I thank you.

DR. F. E. DANIEL, President: In accepting this beautiful, valuable and historical gavel, so touchingly, so beautifully, so gracefully and so forcibly presented, I am strongly impressed with a sense of the great responsibility I am assuming. I accept this gavel with the responsibility that goes with it, and shall wield it to the best of my ability, during the brief term for which I have been elected, in behalf of the best interests of the State Medical Association of Texas.

I shall never pick it up but that there shall arise before my mental vision those scenes which occurred around this tree some forty or fifty years ago. There will ever cluster around it memories of those terrible, bloody days. There is something sacred in it. I will always be reminded of the importance and duty of wielding this gavel impartially, and, with God's help, I will do so.

The inscription upon it will be an additional incentive. It sets forth appropriately and beautifully the name, object and ambition of this Association. It shall be the *in hoc signo vinces* of our Association. By God's help, under this banner we will march on to new work and to grander victories.

Dr. F. E. Daniel said (introducing Dr. Moore): Dr. J. T. Moore, our retiring Secretary, now becomes Vice-President of your Association. He has been faithful in the many duties of his former office, and, as Vice-President, you may expect him to work with the same zeal and earnestness.

(Introducing Dr. Cantrell): Here is a tall sycamore of the profession, whose silvery tongue has ever spoken for the best interests of the profession. He is a worker, and it affords me great pleasure to present him as one of your Vice-Presidents.

(Introducing Dr. Shropshire): Gentlemen, one of the workers of the Association who has contributed in no small degree to the success of this reorganization. I dub him the "Samson" of our body.

(Introducing Dr. Law): Gentlemen, the silvery tongued orator from Belton, whose voice you will hear at our next meeting. Prepare yourselves for a rare treat, for you will get it.

Dr. Law, in answer to the cries of "Speech," said: Gentlemen, it seems almost superfluous for me to assure you that I appreciate this honor and compliment. I want to assure you that I will do my best, and an angel could do no more.

Dr. F. E. Daniel (introducing Dr. Chase): I want to present to you your Secretary elect. I want to commend him to you as a handsome gentleman. A young man full of promise, of inestimable latent, potential energy. A man of wonderful courage, who will volunteer to take up the pen laid down by the distinguished gentleman on my right (Dr. Moore). He knows not what he is doing, I fear.

Dr. Chase: Mr. President, and gentlemen of the House of Delegates, I wish to thank you for the honor which you have bestowed upon me, and especially for the personal compliment conferred upon me at this time in the history of the State Association. I will state to you frankly that I had no expectation of being elected to this office. When my friends came to announce my election, I had a feeling of depression. I had argued to other men that the taking of an office was a duty they owe to the Association. I now have to take my own medicine. I promise you that, seeing in this election to office a call to duty, I will take up the work, and do all in my power to further the interests of the Association. I want to ask, request, and urge that every gentleman present do what he can to assist me in my efforts.

On motion of Dr. Paschal, Drs. Stamps and Knight were appointed a committee to go to the General Assembly and advise them of the choice of the House of Delegates, and announce that the new officers would be presented to the General Assembly at 2 p. m.

Dr. Baylor read the report of the Board of Councilors. On motion the report was received and the items ordered paid. The Councilors' bills amounted to $648.52.

Dr. Loggins presented the report of the Committee on Finance as follows:

REPORT OF THE COMMITTEE ON FINANCE.

Your Committee on Finance, to whom the reports of the Secretary and Treasurer and the expense accounts of the Councilors were referred, beg leave to report as follows:

We have examined the books and accounts of the Secretary and Treasurer and have found them to be correct, and the finances of the Association as shown by the report of the Treasurer.

We recommend that the House of Delegates pay Dr. Joohn T. Moore for his service as Secretary since the death of our late Secretary, Dr. H. A. West.

We have examined the expense accounts submitted by the several Councilors for money expended by them in the prosecution of their work of organization, and we recommend that they be paid.

Respectfully,

J. C. LOGGINS,
C. M. ALEXANDER,
NEWT LONG.

Adopted after an amendment allowing Dr. Moore the sum of $200 with thanks of the Association.

On motion by Dr. Loggins, Drs. Paschal, Moore and Miller were appointed a committee to write Mrs. West a letter expressing interest and sympathy, and communicate to her the disposition made by the House concerning the matter of salary paid Dr. West.

On motion the salary of the Secretary was ordered paid monthly.

Dr. T. J. Wilson read a supplementary report of the Board of Medical Examiners, which was received and endorsed.

The following committee was appointed to prepare memorials and hold suitable services at the next meeting: Drs. J. E. Thompson, Bacon Saunders, J. M. Inge, W. R. Blailock, J. E. Gilcreest.

A resolution by Dr. Cummings was adopted extending thanks to the city of Austin, the county of Travis, to the State University, the Governor, and Dr. and Mrs. Goodall Wooten for their courtesy, kindness and hospitality.

The President announced the appointment of special and standing committees in the afternoon.

Dr. Moore moved to adopt the amendment introduced by him on the previous day, inserting in chapter 6, section 3, the words: "As furnished by the State Secretary." And in section 4 of the same chapter: "And take his receipt for the same," and "and mail programs to members one month before the annual meeting." After discussion the amendments were adopted.

Dr. Bennett's amendment to section 1, chapter 9, making ten days read "thirty days" was read and adopted.

On motion of Dr. Decker thanks were extended the Entertainment Committee for the excellent manner in which they had done their work.

Adjourned until 2 p. m.

April 29th, 2:30 p. m.

Meeting called to order by the President.

Committees and section officers were announced (see page 4).

On motion of Dr. Reuss, the committees just announced were made standing committees.

The Secretary was instructed to write Senator Heyburn endorsing the Pure Food Bill and assuring him of the support and appreciation of the State Medical Association of Texas.

Decided that the next session of the House of Delegates would be held Tuesday, Wednesday, Thursday and Friday of the last week in April, 1905.

The Scientific Committee was instructed to arrange for a section on railroad surgery.

After much discussion, on motion by Dr. Jackson, the Scientific Committee was directed to issue the programs on the 15th of March.

The general session was then notified that the House of Delegates was about to adjourn until the last Tuesday in April, 1905.

Dr. York extended the thanks of the profession and citizens of Houston for selecting that city as the next place of meeting.

The House then adjourned.

*MEMBERS REGISTERED AT AUSTIN MEETING, 1904.

Name.	City.	County.
Allen, W. H.	Marlin	Falls.
Allen, Willard	Harleton	Harrison.
Alexander, C. M.	Coleman	Coleman.
Alexander, B. D.	Manchaca	Travis.
Anderson, G. M.	Tanglewood	Lee.
Anderson, J. C.	Granger	Williamson.
Armstrong, J. A.	San Marcos	Hays.
Aston, N. S.	Buffalo	Leon.
Austin, J. L.	Rockwall	Rockwall.
Barnes, H. D.	Tulia	Swisher.
Barr, H. A.	Beaumont	Jefferson.
Barnes, L. M.	Thorndale	Milam.
Barnes, F. L.	Trinity	Trinity.
Barham, J. H.	Garrison	Nacogdoches.
Batts, E. L.	San Angelo	Tom Green.
Berg, S.	San Antonio	Bexar.
Becton, Joe	Greenville	Hunt.
Behrens, C. L.	Cherokee	San Saba.
Bell, T. J.	Tyler	Smith.
Bennett, T. J.	Austin	Travis.
Black, T. J.	Elroy	Travis.
Black, C. C.	Georgetown	Williamson.
Blallock, W. R.	McGregor	McLennan.
Blalock, W. C.	Kosse	Limestone.
Blanton, J. J.	Buda	Hays.
Blair, H. A.	San Antonio	Bexar.
Bliem, M. J.	San Antonio	Bexar.
Bowers, S.	Brenham	Washington.
Bradfield, J. W.	Daingerfield	Morris.
Brussell, T. C.	Cost	Gonzales.
Burleson, E. M.	Richland Springs	San Saba.
Burleson, J. H.	San Antonio	Bexar.
Burrows, H. A.	New Boston	Bowie.
Bundy, Z. T.	Milford	Ellis.
Bundy, O. T.	Milford	Ellis.
Bute, J. H.	Houston	Harris.
Burroughs, S. R.	Buffalo	Leon.
Caffery, Russell	San Antonio	Bexar.
Cary, E. H.	Dallas	Dallas.
Campbell, P. L.	Dallas	Dallas.
Carter, W. S.	Galveston	Galveston.
Cantrell, C. E.	Greenville	Hunt.
Calhoun, B. F.	Beaumont	Jefferson.
Carhart, J. W.	Austin	Travis.
Chase, I. C.	Fort Worth	Tarrant.
Chilton, P. H.	Zourette	Comanche.
Chimney, W. T.	Wortham	Limestone.
Combs, H. B.	Bastrop	Bastrop.
Collins, W. B.	Lovelady	Houston.
Coleman, P. C.	Colorado	Mitchell.
Corley, Sam	Clarksville	Red River.
Corry, J. F.	Rockwall	Rockwall.
Clark, W. M.	Floresville	Wilson.
Cooke, D. M.	Granger	Williamson.
Cummings, H. W.	Hearne	Robertson.
Daniel, F. E.	Austin	Travis.

* A considerable number of members failed to enroll.

Name.	City.	County.
Dean, J. J	Waco	McLennan.
Davis, W. A	Salado	Bell.
Decker, C. M	San Antonio	Bexar.
Davis, Oscar	Cistern	Fayette.
Decherd, H. B	Galveston	Galveston.
Davidson, G. L	Wharton	Wharton.
De Steuger, J. R	San Marcos	Hays.
Deal, E. O	Sherwood	Tom Green.
Denman, P. M	Lufkin	Angelina.
Dinwiddie, R. L	San Antonio	Bexar.
Dildy, J. E	Lampasas	Lampasas.
Dodson, J. E	Vernon	Wilbarger.
Dorbandt, J. D	Lampasas	Lampasas.
Douglas, J. G	Itasca	Hill.
Dunlap, Elbert	Dallas	Dallas.
Dunbar, W. P	Campbell	Hunt.
Dupuy, A. D	San Antonio	Bexar.
Earthman, H. W	Conroe	Montgomery.
Epperson, A. S	Cameron	Milam.
Embree, J. W	Belton	Bell.
Elmendorf, E. H	San Antonio	Bexar.
Evans, E. O	San Antonio	Bexar.
Edens, H. L	Bertram	Burnet.
Ellington, F. H	Pittsburg	Camp.
Erwin, J. C	McKinney	Collin.
Ewing, J. A	Dallas	Dallas.
Estes, C. P	Hereford	Deaf Smith.
Ellis, B. V	Paris	Lamar.
Evans, J. B	Devine	Medina.
Frazier, J. M	Belton	Bell.
Ferguson, B	San Antonio	Bexar.
Florence, J. H	Dallas	Dallas.
Floyd, J. R	Itasca	Hill.
Foscue, G. B	Waco	McLennan.
FitzSimon, J. T	Castroville	Medina.
Ferguson, E. S	Cameron	Milam.
Ferrell, J. Z	Tyler	Smith.
Fly, D. R	Amarillo	Potter.
Fowler, D. D	Paint Rock	Runnels.
Frazier, J. R	Marine	Tarrant.
Fields, J. D	Manor	Travis.
Fowler, W. E	Huntsville	Walker.
Fleming, W. P	Georgetown	Williamson.
Foster, O. C	Corn Hill	Williamson.
Ghent, H. O	Belton	Bell.
Graves, R. S	Austin	Travis.
Graves, M. L	San Antonio	Bexar.
Graves, H. N	Georgetown	Williamson.
Greenwood, J	San Antonio	Bexar.
Guinn, E. E	Jacksonville	Cherokee.
Garwood, A	New Braunfels	Comal.
Gray, J. D	Moulton	Lavaca.
Gray, A. J	Comanche	Comanche.
Gray, A. N	Floyd	Hunt.
Gidney, C. C	Granger	Williamson.
Gilcreest, J. E	Gainesville	Cooke.
Gilbert, G. H	Austin	Travis.
Gilbert, E. B	Gorman	Eastland.
Gilbert, Joe	Austin	Travis.
Grace, M. B	Seguin	Guadalupe.
Grigsby, C. M	Kaufman	Kaufman.
Gibson, J. W	Austin	Travis.
Gibson, B. F	Midway	Madison.
Galloway, C. M	Marine	Tarrant.
Grizzard, L. A	Abilene	Taylor.
Goldsmith, J. B	Quitman	Wood.
Hall, C. E	Lindale	Smith.

Name.	City.	County.
Hathcock, A. L.	Palestine	Anderson.
Harrison, R. H., Sr.	Columbus	Colorado.
Harrison, R. H., Jr.	Columbus	Colorado.
Haden, H. O.	Galveston	Galveston.
Halbert, O. S.	Theo	McLennan.
Hambright, J. G.	Roby	Nolan.
Horn, J. M.	Paige	Bastrop.
Howell, Asa	Burnet	Burnet.
Hofstetter, G. A.	Corsicana	Navarro.
Herzog, Sofie	Brazoria	Brazoria.
Henderson, J. C.	Waelder	Gonzales.
Hudson, S. E.	Austin	Travis.
Hughes, C. T.	Gainesville	Cooke.
Hunter, J. W.	Theo	McLennan.
Hunter, J. R.	Hornsby	Travis.
Hygins, D. M.	Gainesville	Cooke.
Hill, J. A.	Groveton	Trinity.
Hill, B. W. D.	Dawson	Navarro.
Hill, H. B.	Austin	Travis.
Howard, E. M.	Uvalde	Uvalde.
Holleman, W. D.	Laneville	Rusk.
Howze, J. E.	Austin	Travis.
Haigler, S. H.	Austin	Travis.
Hairston, T. C.	Independence	Washington.
Harrell, T. M.	Round Rock	Williamson.
Hamilton, E. V.	Austin	Travis.
Hamilton, H. J.	Laredo	Webb.
Hazlewood, W. R.	Leander	Williamson.
Harper, H. W.	Austin	Travis.
Harrell, T. H.	Hutto	Williamson.
Holloway, J. A.	Round Rock	Williamson.
Harris, R. A.	Pleasant Grove	Wood.
Inge, J. M.	Denton	Denton.
Jamison, W. G.	Palestine	Anderson.
Jamison, Geo. M.	Buda	Hays.
Jackson, T. T.	San Antonio	Bexar.
James, J. M.	Glen Cove	Coleman.
Jeter, V. S.	Atlanta	Cass.
Jenkins, A. B.	Hubbard	Hill.
Jenkins, D. J.	Daingerfield	Morris.
Jones, C. C.	Comfort	Kendall.
Jones, W. T.	Georgetown	Williamson.
Johnson, W. L.	Giddings	Lee.
Joyce, J. H.	Buffalo	Leon.
Keiller, Wm.	Galveston	Galveston.
Kennedy, A. B.	Bonham	Fannin.
King, G. T.	Elgin	Bastrop.
Kingsley, B. F.	San Antonio	Bexar.
Kirk, L. M.	Austin	Travis.
Kinney, T.	San Marcos	Hays.
Knox, R. W.	Houston	Harris.
Knolle, B. E.	Industry	Austin.
Kotzeben, A. M.	Moulton	Lavaca.
Krueger, E.	Kyle	Hays.
Kuhn, Aug.	Walburg	Williamson.
Lain, G. D.	Sanger	Denton.
Law, J. D.	Belton	Bell.
Lamar, L. L.	Georgetown	Williamson.
Lankford, J. S.	San Antonio	Bexar.
Le Grand, C. W.	Hempstead	Waller.
Leonard, H.	New Braunfels	Comal.
Link, H. R.	Palestine	Anderson.
Lillard, Z. F.	Houston	Harris.
Lindsay, A. H.	Paris	Lamar.
Litten, Frank	Austin	Travis.
Long, Newt	Santa Anna	Coleman.
Loggins, J. C.	Ennis	Ellis.

Name.	City.	County.
Mackeckney, L	Patroon	Shelby.
Magruder, E. G	Sealy	Austin.
Mahaffey, M. G	Glen Cove	Coleman.
Magruder, F. B	San Angelo	Tom Green.
Mayo, S. E	Cedar Creek	Bastrop.
Magee, W. J	Groveton	Trinity.
Magness, J. C	Devine	Medina.
Martin, R. G	Lavernia	Wilson.
Martin, F. R	Kyle	Hays.
Maxwell, T. O	Austin	Travis.
Maxwell, F. A	Austin	Travis.
Mathews, W. J	Mt. Pleasant	Titus.
Mathews, W. J	Austin	Travis.
McLeod, R. H	Palestine	Anderson.
McReynolds, G. S	Temple	Bell.
McCutcheon, J. M	Temple	Bell.
McClung, R. L	Atlanta	Cass.
McLaughlin, J. W., Jr	Austin	Travis.
McLaughlin, J. W	Galveston	Galveston.
McCaleb, J. H	Gonzales	Gonzales.
McCaleb, W. E	Webberville	Travis.
McCracken, J. H	Mineral Wells	Palo Pinto.
McKnight, J. M	Laredo	Webb.
Mellish, E. J	El Paso	El Paso.
Miller, R. F	Sherman	Grayson.
Miller, R. E. L	Fort Worth	Tarrant.
Moody, G. H	San Antonio	Bexar.
Moody, M. L	Greenville	Hunt.
Moss, R. E	San Antonio	Bexar.
Moore, T. W	La Grange	Fayette.
Moore, John T	Galveston	Galveston.
Morse, Oliver	Weatherford	Parker.
Morris, J. E	Madisonville	Madison.
Morris, S. M	Galveston	Galveston.
Morris, R. T	Houston	Harris.
Mosely, J. A. R	Jefferson	Marion.
Monroe, D	Cameron	Milam.
Mullen, J. A	Houston	Harris.
Naylor, S. D	Stephenville	Erath.
Neathery, E. J	Sherman	Grayson.
Neel, J. M	Bonham	Fannin.
Nicks, J. M	Stone City	Brazos.
Noster, A. H	New Braunfels	Comal.
Northcutt, W. D	Longview	Gregg.
Nowlin, A	Georgetown	Williamson.
Nowlin, B	Georgetown	Williamson.
Oliver, J. P	Caldwell	Burleson.
Parsons, E. B	Palestine	Anderson.
Payne, J. H	Holland	Bell.
Paschal, F	San Antonio	Bexar.
Paine, J. F. Y	Galveston	Galveston.
Painter, F. U	Pilot Point	Denton.
Pannell, J. A	Martindale	Caldwell.
Pettway, T. R	Austin	Travis.
Pope, J. G	Coleman	Coleman.
Pollard, W. J	Kaufman	Kaufman.
Pool, M. M	El Campo	Wharton.
Powell, W. P	Willis	Montgomery.
Porter, J. D	Hutto	Williamson.
Price, S. W	Graham	Young.
Radkey, O. H	Edna	Jackson.
Rape, T. A	Ballinger	Runnels.
Randall, Edw	Galveston	Galveston.
Rape, W. A	Victoria	Victoria.
Ramsey, J. B	Glen Cove	Coleman.
Red, S. O	Houston	Harris.
Reeve, W. T	Blanco	Comal.

Name.	City.	County.
Reuss, J. H.	Cuero	DeWitt.
Rimmer, S. W.	San Saba	San Saba.
Rice, S. P.	Marlin	Falls.
Robert, J. J.	Hillsboro	Hill.
Rosser, C. M.	Dallas	Dallas.
Ross, F. R.	Houston	Harris.
Rogers, M. W.	Alexander	Erath.
Robertson, G. L.	Leander	Williamson.
Russ, W. B.	San Antonio	Bexar.
Sachs, A.	San Saba	San Saba.
Sadler, J. G.	Henderson	Rusk.
Sanderson, G. H.	San Saba	San Saba.
Sappington, J. B.	Oak Hill	Travis.
Saunders, Bacon	Fort Worth	Tarrant.
Seymour, F. B.	Beeville	Bee.
Seilers, R. B.	Comanche	Comanche.
Scott, A. C.	Temple	Bell.
Scott, J. W.	Houston	Harris.
Shaw, E. M.	Victoria	Victoria.
Shaw, E. N.	Cameron	Milam.
Shepard, R. R.	Anson	Jones.
Short, J. L.	Houston	Harris.
Shropshire, W.	Yoakum	DeWitt.
Simmons, C. L.	Liberty Hill	Williamson.
Sibley, A. J.	Creedmoor	Travis.
Smith, M. M.	Austin	Travis.
Smith, C. A.	Tyler	Smith.
Smith, Edgar	Mendoza	Caldwell.
Smith, J. C.	Starrville	Smith.
Smith, M.	Sulphur Springs	Hopkins.
Sparks, Geo.	San Saba	San Saba.
Spaulding, T. E.	Greenville	Hunt.
Sprueill, Z. J.	Jewett	Leon.
Spivey, W. J.	Teneha	Shelby.
Stacy, H. C.	Waxahachie	Ellis.
Stamps, A. M.	Seguin	Guadalupe.
Steiner, Ralph	Austin	Travis.
Sterzing, H. F.	Austin	Travis.
Taylor, Holman	Marshall	Harrison.
Taylor, T. B	Elgin	Bastrop.
Taylor, M. A.	Austin	Travis.
Taylor, J. F.	Briggs	Williamson.
Terrell, J. J	Galveston	Galveston.
Terhune, A. A.	Jefferson	Marion.
Thayer, A. E.	Galveston	Galveston.
Thompson, W. R.	Smithville	Bastrop.
Thompson, J. E.	Galveston	Galveston.
Thompson, W. R.	Fort Worth	Tarrant.
Thompson, F. D.	Fort Worth	Tarrant.
Thomas, G. T.	Rogers	Bell.
Thomas, E. M.	Georgetown	Williamson.
Thurston, D. M.	Beeville	Bee.
Torbett, J. W.	Marlin	Falls.
Trenckmann, O. A.	Bellville	Austin.
Trott, G. A.	Georgetown	Williamson.
Turner, J. S.	Terrell	Kaufman.
Turner, S. T.	El Paso	El Paso.
Wagley, T. J.	Cleburne	Johnson.
Walker, C. C.	Gainesville	Cooke.
Walker, E. R.	Weimar	Colorado.
Watson, S. S.	Elgin	Bastrop.
Watkins, W. A.	Kemp	Kaufman.
Watt, W. Neal	Austin	Travis.
Weaver, T. P.	DeLeon	Comanche.
Weems, M. A.	Columbia	Brazoria.
Weems, M. L., Jr.	Brazoria	Brazoria.
Westbrook, J. W.	Sipe Springs	Comanche.

Name.	City.	County.
Weber, W. G	Merrillton	Travis.
Weller, O. O	Austin	Travis.
Wilson, J. R	Bastrop	Bastrop.
Wilson, J. T.	Sherman	Grayson.
Wille, L. G	New Braunfels	Comal.
Williamson, O	Belmont	Gonzales.
Williams, F. R	Kingsbury	Guadalupe.
Williams, M. O	Staple	Guadalupe.
Willburn, D. Y	Runge	Karnes.
Williamson, A. T	Kingsland	Llano.
Wickline, R. M.	Austin	Travis.
Whitis, Rufus	Dallas	Dallas.
Whitehead, T. O	Del Rio	Val Verde.
Whiteside, T. F	Timpson	Shelby.
Westbrook, T. H	Clarendon	Donley.
White, W. P	Henderson	Rusk.
Wood, W. E	Elgin	Bastrop.
Wood, W. A	Charleston	Delta.
Wooters, J. S	Crockett	Houston.
Worsham, B. M	Austin	Travis.
Yeager, C. P	Brownwood	Brown.
Yeager, R. L	Mineral Wells	Palo Pinto.
Zachery, G. R	Talpa	Runnels.

GUESTS.

Name.	City.	State.
Carter, H. R	Baltimore	Maryland.
Dowling, Oscar	Shreveport	Louisiana.
McCloud, C. N	St. Paul	Minnesota.
Punton, John	Kansas City	Missouri.
Reed, Chas. A. L	Cincinnati	Ohio.
Thayer, E. J	Chicago	Illinois.

OFFICERS OF THE TEXAS STATE MEDICAL
HOUSTON, TEXAS,

Session.	DATE OF MEETING.	PLACE OF MEETING.	PRESIDENTS.	VICE-PRESIDENT
1	June, 1869	Houston	T. J. Heard	R. H. Jones
2	June, 1870	Houston	R. H. Jones	R. W. Lundy
3	June, 1871	Houston	D. R. Wallace	L. Hudspeth
4	June, 1872	Houston	R. T. Flewellen	J. A. McQueen
5	April, 1873	Waco	D. F. Stuart	H. W. Brown
6	April, 1874	Dallas	A. G. Clopton	T. D. Wooten
7	April, 1875	Austin	H. W. Brown	L. R. Mayfield
8	April, 1876	Marshall	R. H. Harrison	John H. Pope
9	April, 1877	Galveston	W. D. Kelly	Geo. Cupples
10	April, 1878	San Antonio	Geo. Cupples	R. W. White
11	April, 1879	Sherman	John H. Pope	S. F. Matchett
12	April, 1880	Brenham	A. R. Kilpatrick	R. M. Swearingen
13	April, 1881	Waco	Ashbel Smith	S. F. Starley
14	April, 1882	Fort Worth	S. F. Starley	W. P. Burts
15	April, 1883	Tyler	A. P. Brown	T. H. Nott
16	April, 1884	Belton	H. C. Ghent	E. P. Becton
17	April, 1885	Houston	E. P. Becton	R. Rutherford
18	April, 1886	Dallas	T. H. Nott	R. H. Chilton
19	April, 1887	Austin	S. R. Burroughs	R. T. Knox
20	April, 1888	Galveston	J. F. Y. Paine	H. K. Leake
21	April, 1889	San Antonio	R. M. Swearingen	A. Sims
22	April, 1890	Fort Worth	W. P. Burts.	J. C. J. King
23	April, 1891	Waco	W. H. Wilkes	P. C. Coleman
24	April, 1892	Tyler	J. D. Osborn	T. J. Bell
25	April, 1893	Galveston	J. H. Sears	C. M. Rosser
26	April, 1894	Austin	J. W. McLaughlin	W. L. York
27	April, 1895	Dallas	P. C. Coleman	J. T. Wagley
28	April, 1896	Fort Worth	J. C. Loggins	A. N. Denton
29	April, 1897	Paris	Bacon Saunders	S. C. Red
30	April, 1898	Houston	J. T. Wilson	J. M. Fort
31	April, 1899	San Antonio	A. B. Gardner	B. E. Hadra
32	April, 1900	Waco	B. E. Hadra	Taylor Hudson
33	April, 1901	Galveston	Taylor Hudson	S. C. Red
34	May, 1902	Dallas	S. C. Red	J. E. Thompson
35	April, 1903	San Antonio	Frank Paschal	F. E. Daniel
36	April, 1904	Austin	F. E. Daniel	Jno. T. Moore

* Died July, 1886, and F. E. Daniel was appointed to serve until next meeting.

ASSOCIATION SINCE ITS ORGANIZATION AT JUNE 16, 1869.

VICE PRESIDENT.	VICE PRESIDENT.	SECRETARIES.	TREASURERS.
D. W. Wallace		A. Connell	F. Hassenberg.
W. J. Locke		A. Connell	W. P. Riddell.
J. T. Norris		A. Connell	W. P. Riddell.
D. F. Stuart		A. Connell	J. Larendon.
J. M. Morrison		S. O. Young	J. Larendon.
M. H. Oliver		W. A. East	J. Larendon.
M. A. Taylor	R. H. Harrison	W. A. East	J. Larendon.
T. W. Wylie	W. H. Park	W. A. East	J. Larendon.
R. M. Swearingen	J. H. Sears	W. A. East	J. Larendon.
W. E. Saunders	J. D. Field	W. A. East	J. Larendon.
S. F. Starley	S. Eagon	W. A. East	J. Larendon.
E. J. Beall	O. H. Seeds	R. H. L. Bibb	J. Larendon.
J. W. McLaughlin	J. A. Summers	R. H. L. Bibb	J. Larendon.
W. A. Adams	Joe. S. Willis	W. J. Burt	J. Larendon.
J. D. Osborn	Frank Allen	W. J. Burt	J. Larendon.
H. H. Darr	M. Martin	W. J. Burt	J. Larendon.
John C. Jones	S. R. Burroughs	W. J. Burt	J. Larendon.
J. C. Loggins	H. L. Parsons	W. J. Burt*	J. Larendon.
A. M. Douglass	A. A. Terhune	F. E. Daniel	J. Larendon.
A. V. Doak	O. Eastland.	F. E. Daniel	J. Larendon.
B. F. Kingsley	I. E. Clark	F. E. Daniel	J. Larendon.
M. D. Knox	W. W. Reeves	F. E. Daniel	J. Larendon.
W. L. Rogers	B. H. Vaughn	H. A. West	J. Larendon.
F. W. Pitts, Jr	T. J. Bennett	H. A. West	J. Larendon.
E. M. Rabb	W. A. Watkins	H. A. West	J. Larendon.
W. R. Blallock	W. H. Lancaster	H. A. West	J. Larendon.
N. B. Kennedy	T. B. Bass	H. A. West	J. Larendon.
J. S. Letcher	David Cerna	H. A. West	J. Larendon.
A. C. Scott	C. M. Alexander	H. A. West	J. Larendon.
Taylor Hudson	R. W. Knox.	H. A. West	J. Larendon.
Geo. H. Lee.	F. D. Thompson	H. A. West	R. F. Miller.
L. Ashton	S. T. Turner	H. A. West	R. F. Miller.
J. W. Nixon	W. A. Watkins	H. A. West	R. F. Miller.
J. E. Gilcreest	H. K. Leake	H. A. West	R. F. Miller.
A. L. Hathcock	Joe Becton	H. A. West†	R. F. Miller.
C. E. Cantrell	Walter Shropshire	I. C. Chase	R. F. Miller.

†Died Dec. 31, 1903. Jno. T. Moore was appointed to serve until next meeting.

IN MEMORIAM.

Dr. J. W. Burt, Austin, Texas, died July 19, 1886.
Dr. H. W. Moore, Fort Worth, Texas, died September 26, 1886.
Dr. G. K. McGregor, Waco, Texas, died May 12, 1884.
Dr. J. K. Meek, Ennis, Texas, died November 11, 1886.
Dr. James Haley, Moffat, Texas, died February 20, 1887.
Dr. J. S. Willis, Waco, Texas, died July 6, 1887.
Dr. A. Welch, ————, died September 22, 1886.
Dr. J. T. Howe, Huntsville, Texas, died August 13, 1888.
Dr. Z. W. Baker, Temple, Texas, died December 13, 1888.
Dr. A. C. White, Cuero, Texas, died December —, 1888.
Dr. F. A. Tompkins, Sandy Point, Texas, died July 26, 1888.
Dr. J. M. Ross, Brenham, Texas, died February 10, 1889.
Dr. Y. D. Harrington, Terrell, Texas, died June 9, 1889.
Dr. H. P. Downman.
Dr. J. L. Felder, Jr., Pittsburg, Texas.
Dr. W. H. Hardison, Fort Worth, Texas.
Dr. W. D. Kelley, Galveston, Texas.
Dr. Ed. Randall, Galveston, Texas, died November 13, 1889.
Dr. A. R. Kilpatrick, Navasota, Texas, died September 10, 1887.
Dr. Ashbel Smith, Cedar Bayou, Texas, died January 21, 1886.
Dr. S. F. Starley, Tyler, Texas, died December 19, 1887.
Dr. J. M. Lewis, Mexia, Texas.
Dr. S. T. Lowry, San Antonio, Texas, died June 30, 1890.
Dr. W. H. Park, Tyler, Texas, died November 4, 1885.
Dr. J. B. Robertson, Goliad, Texas.
Dr. W. L. Rogers, Galveston, Texas, died April —, 1887.
Dr. R. B. White, Ennis, Texas.
Dr. J. H. Martin, Dallas, Texas, died July 18, 1887.
Dr. E. J. Carothers, San Antonio, Texas.
Dr. A. E. Carothers, San Antonio, Texas.
Dr. G. W. Tucker, Comanche, Texas.
Dr. S. A. Towsey, Galveston, Texas.
Dr. Etien Mellou, Brownsville, Texas.
Dr. W. E. Saunders, Sherman, Texas.

Dr. Hilary Ryan.
Dr. W. A. East, Hallettsville, Texas, died December 5, 1885.
Dr. L. S. Cabell, Charlotteville, Va. (Honorary.)
Dr. Willis Westmoreland, Atlanta, Ga. (Honorary.)
Dr. J. H. T. King, Laredo, Texas.
Dr. S. H. Smith, Dallas, Texas.
Dr. A. A. Terhune, Jefferson, Texas.
Dr. L. J. Graham, Henderson, Texas, died April 15, 1891.
Dr. F. T. Paine, Comanche, Texas, died April 16, 1891.
Dr. G. W. Kerr, Waelder, Texas, died April —, 1891.
Dr. T. S. Burke, Corpus Christi, Texas, died September 21, 1891.
Dr. W. T. Strain, Wills Point, Texas, died November 1, 1891.
Dr. W. W. Reeves, Austin, Texas, killed December 29, 1891.
Dr. T. M. Stone, Jasper, Texas, died January 18, 1892.
Dr. E. J. Ward, Waxahachie, Texas, died December 17, 1893.
Dr. E. G. Nicholson, Del Rio, Texas, died February 3, 1893.
Dr. M. S. Crow, Stephenville, Texas, died May 3, 1892.
Dr. C. C. Francis, Cleburne, Texas, died November 16, 1892.
Dr. A. W. Pope, Marshall, Texas, died November 3, 1892.
Dr. A. D. Burroughs, Houston, Texas.
Dr. J. E. Roach, Sipe Springs, Texas, died April 10, 1893.
Dr. C. F. Payne, Comanche, Texas, died September 13, 1893.
Dr. J. L. May, Stephenville, Texas.
Dr. M. H. Oliver, Ennis, Texas, died September 5, 1893.
Dr. John L. Wagley, Cleburne, Texas, died December 13, 1893.
Dr. W. H. Waters, Independence, Texas, died June 4, 1894.
Dr. L. E. Castleton, Houston, Texas, died September 17, 1893.
Dr. James Crowling, Houston, Texas, died June 23, 1894.
Dr. H. F. Witherspoon, Corsicana, Texas, died September 7, 1894.
Dr. Michael Perl, Houston, Texas, died January 2, 1895.
Dr. Jas. Kennedy, Galveston, Texas, died March 27, 1895.
Dr. George Cupples, San Antonio, Texas, died April 9, 1895.
Dr. C. B. Raines, Mineral Wells, Texas (Honorary), died June 28, 1895.
Dr. W. P. Burts, Fort Worth, Texas, died September 5, 1895.
Dr. G. M. D. Patterson, Franklin, Texas, died July 8, 1895.
Dr. Josephus Cummings, Austin, Texas, died July 13, 1895.
Dr. A. D. Paulus, Flatonia, Texas, date of death not reported.
Dr. J. L. Carter, Dallas, Texas, date of death not reported.
Dr. W. H. Wilkes, Waco, Texas, died August 14, 1896.
Dr. H. H. Darr, Caldwell, Texas, died November 22, 1896.
Dr. B. W. Bristow, Flatonia, Texas, died July 13, 1896.

Dr. J. S. Letcher, Dallas, Texas, died December 2, 1896.
Dr. W. B. Brooks, Dallas, Texas, died October 4, 1896.
Dr. R. S. Gregg, Manor, Texas, died January 22, 1897.
Dr. J. H. Blackburn, Mineral Wells, Texas.
Dr. E. N. Camp, Lewisville, Texas, died March 11, 1898.
Dr. N. B. Kennedy, Hillsboro, Texas.
Dr. R. M. Swearingen, Austin, Texas, died August 7, 1898.
Dr. W. Dupre, Dallas, Texas (Honorary), died November 28, 1898.
Dr. J. F. Noyes, Providence, R. I. (Honorary), date of death not reported.
Dr. David Yandell, Louisville, Ky. (Honorary), died May 3, 1898.
Dr. Thomas G. Heard, Galveston, Texas (Honorary), died March 8, 1899.
Dr. R. T. Knox, Gonzales, Texas, date of death not reported.
Dr. R. Rutherford, Houston, Texas, date of death not reported.
Dr. R. J. Flewellen, Houston, Texas (Honorary), date of death not reported.
Dr. M. D. Knox, Hillsboro, Texas, died August 27, 1899.
Dr. J. M. Litten, Austin, Texas (Honorary), died March 31, 1900.
Dr. J. W. Cruse, Beaumont, Texas.
Dr. A. E. McMahon, Tolar (formerly Marshall), Texas, died June 13, 1900.
Dr. A. H. Schenk, Kenney, Texas, died August 24, 1900.
Dr. A. V. Doak, Taylor, Texas, died September 14, 1900.
Dr. E. P. Becton, Austin, Texas, died January 14, 1901.
Dr. A. N. Denton, Austin, Texas, died March 4, 1901.
Dr. R. H. Chilton, Dallas, Texas, died June 5, 1901.
Dr. J. B. Massie, Houston, Texas, died August 24, 1901.
Dr. W. W. Walker, Schulenburg, Texas, died May 5, 1901.
Dr. J. H. McDaniel, Centerville, Texas, date of death not reported.
Dr. J. D. Fennell, Seguin, Texas, died June 28, 1901.
Dr. J. H. Sears, Waco, Texas, died December 4, 1901.
Dr. G. W. Boggs, Marquez, Texas, died February 19, 1902.
Dr. G. W. Akard, Springtown, Texas, died December 19, 1901.
Dr. J. C. Mayfield, Galveston, Texas, died December 20, 1901.
Dr. Lawrence Ashton, Dallas, Texas, died March 6, 1902.
Dr. T. C. Osborn, died August 19, 1902.
Dr. W. A. Adams, Fort Worth, Texas, died October 15, 1902.
Dr. A. B. Gardner, Bellville, Texas, died October 22, 1902.
Dr. B. F. Eads, Marshall, Texas, died February 1, 1903.
Dr. W. H. Moore, Runge, Texas, died March 11, 1903.
Dr. S. H. Stout, Clarendon, Texas, died September 18, 1903.

CONSTITUTION AND BY-LAWS

OF

The State Medical Association of Texas.

[As Adopted at San Antonio, April 29, 1903, and amended at Austin, April 29, 1904.]

CONSTITUTION.

ARTICLE I.

NAME OF THE ASSOCIATION.

The name and title of this organization shall be the "State Medical Association of Texas."

ARTICLE II.

PURPOSES OF THE ASSOCIATION.

The purposes of this Association shall be to federate and bring into one compact organization the entire medical profession of the State of Texas, and to unite with similar Associations in other States to form the American Medical Association, with a view to the extension of medical knowledge, and to the advancement of medical science; to the elevation of the standard of medical education, and to the enactment and enforcement of just medical laws; to the promotion of friendly intercourse among physicians, and to the guarding and fostering of their material interests; and to the enlightenment and direction of public opinion in regard to the great problems of State medicine, so that the profession shall become more capable and honorable within itself, and more useful to the public in the prevention and cure of disease, and in prolonging and adding comfort to life.

ARTICLE III.

COMPONENT SOCIETIES.

Component societies shall consist of those county medical societies which hold charters from this Association.

ARTICLE IV.

COMPOSITION OF THE ASSOCIATION.

SECTION 1. This Association shall consist of members, delegates and guests.

SEC. 2. *Members.*—The members of this Association shall be the members of the component county medical societies.

SEC. 3. *Delegates.*—Delegates shall be those members who are elected in accordance with this Constitution and By-Laws to represent their respective component societies in the House of Delegates of this Association.

SEC. 4. *Guests.*—Any distinguished physician not a resident of this State may become a guest during any annual session upon invitation of the officers of this Association, and shall be accorded the privilege of participating in all of the scientific work for that session.

ARTICLE V.

HOUSE OF DELEGATES.

The House of Delegates shall be the legislative and business body of the Association, and shall consist of (1) delegates elected by the component county societies, (2) the councilors, and (3) ex-officio, the president and secretary of the Association.

ARTICLE VI.

SECTIONS AND DISTRICT SOCIETIES.

The House of Delegates may provide for a division of the scientific work of the Association into appropriate sections, and for the organization of such councilor district societies as will promote the best interests of the profession, such societies to be composed exclusively of members of component county societies.

ARTICLE VII.

SESSIONS AND MEETINGS.

SECTION 1. The Association shall hold an annual session, during which there shall be held daily not less than two general meetings, which shall be open to all registered members, delegates and guests.

SEC. 2. The time and place for holding each annual session shall be fixed by the House of Delegates.

ARTICLE VIII.

OFFICERS.

SECTION 1. The officers of this Association shall be a president, three vice-presidents, a secretary, a treasurer, and fifteen councilors.

SEC. 2. The president and vice-presidents shall be elected for a term of one year. The secretary, treasurer and councilors shall be elected for terms of three years each, the councilors being divided into classes so that three shall be elected each year. All of these officers shall serve until their successors are elected and installed.

SEC. 3. The officers of this Association shall be elected by the House of Delegates on the morning of the last day of the annual session, but no delegate shall be eligible to any office named in the preceding section, except that of councilor, and no person shall be elected to any such office who is not in attendance on that annual session and who has not been a member of the Association for the past two years.

ARTICLE IX.

FUNDS AND EXPENSES.

Funds for meeting the expenses of the Association shall be arranged for by the House of Delegates by an equal per capita assessment upon each county society, to be fixed by the House of Delegates, by voluntary contribution, and from the profits of its publications. Funds may be appropriated by the House of Delegates to defray the expenses of the annual sessions, for publication, and for such other purposes as will promote the welfare of the Association and profession.

ARTICLE X.

REFERENDUM.

The general meeting of the Association may, by a two-thirds vote of the members present, order a general referendum upon any question pending before the House of Delegates, and the House of Delegates may, by a similar vote of its own members, or after a like vote of the general meeting, submit any such question to the membership of the Association for a final vote; and if the persons voting shall comprise a majority of all the members, a majority of such vote shall determine the question, and be binding upon the House of Delegates.

ARTICLE XI.

THE SEAL.

The Association shall have a common seal, with power to break, change or renew the same at pleasure.

ARTICLE XII.

AMENDMENTS.

The House of Delegates may amend any article of this Constitution by a two-thirds vote of the delegates registered at that annual session; provided, that such amendment shall have been presented in open meeting at the previous annual session, and that it shall have been sent officially to each component county society at least two months before the session at which final action is to be taken.

BY-LAWS.

CHAPTER I.

MEMBERSHIP.

SECTION 1. All members of component societies shall be privileged to attend all meetings and take part in all of the proceedings of the annual sessions, and shall be eligible to any office within the gift of the Association.

SEC. 2. The name of a physician on the properly certified roster of members, or list of delegates, of a component society which has paid its annual assessment, shall be *prima facie* evidence of his right to register at the annual session in the respective bodies of this Association.

SEC. 3. No person who is under sentence of suspension or expulsion from any component society of this Association, or whose name has been dropped from its roll of members, shall be entitled to any of the rights or benefits of this Association, nor shall he be permitted to take any part in any of its proceedings until such time as he has been relieved of such disability.

SEC. 4. Each member in attendance at the annual session shall enter his name on the registration book, indicating the component society of which he is a member. When his right to membership has been verified by reference to the roster of the society he shall receive a badge which shall be evidence of his right to all the privileges of membership at the session.

No member or delegate shall take part in any of the proceedings of an annual session until he has complied with the provisions of this section.

CHAPTER II.

ANNUAL AND SPECIAL SESSIONS OF THE ASSOCIATION.

SECTION 1. The Association shall hold an annual session at such time and place as has been fixed at the preceding annual session.

SEC. 2. Special sessions of either the Association or of the House of Delegates shall be called by the president at his discretion or upon petition of twenty delegates.

CHAPTER III.

GENERAL MEETINGS.

SECTION 1. The general meetings shall include all registered members, delegates and guests who shall have equal rights to participate in the proceedings and discussions, and, except guests, to vote on pending questions. Each general meeting shall be presided over by the president, or in his absence or disability, or by his request, by one of the vice-presidents. Before it, at such time and place as may have been arranged, shall be delivered the annual address of the president and the annual oration, and the entire time of the session so far as may be shall be devoted to papers and discussions relating to scientific medicine.

SEC. 2. The general meeting shall have authority to create committees or commissions for scientific investigations of special interest and importance to the profession and public, and to receive and dispose of reports of the same; but any expense in connection therewith must first be approved of by the House of Delegates.

SEC. 3. Except by special vote, the order of exercises, papers and discussions as set forth in the official program shall be followed from day to day until it has been completed.

SEC. 4. No address or paper before the Association, except those of the president and orator, shall occupy more than twenty minutes in its delivery; and no member shall speak longer than five minutes, nor more than once on any subject.

SEC. 5. All papers read before the society shall be its property. Each paper shall be deposited with the secretary when read.

CHAPTER IV.

HOUSE OF DELEGATES.

SECTION 1. The House of Delegates shall meet annually at 2 p. m. on

the day preceding the annual session of the Association, and shall so fix its hours of meeting as not to conflict with the first general meeting of the Association, or with the meeting held for the address of the president and the annual oration, and so as to give delegates an opportunity to attend the other scientific proceedings and discussions so far as is consistent with their duties. But if the business interests of the Association and profession require, it may remain in session after the final adjournment of the general meeting. The order of business shall be arranged as a separate section of the program.

SEC. 2. Each component county society shall be entitled to send to the House of Delegates each year one delegate for every 100 members, and one for each fraction thereof, but each county society holding a charter from this Association, which has made its annual report and paid its assessment as provided in this Constitution and By-Laws, shall be entitled to one delegate.

SEC. 3. A majority of the registered delegates shall constitute a quorum, and all of the meetings of the House of Delegates shall be open to members of the Association.

SEC. 4. It shall, through its officers, council and otherwise, give diligent attention to and foster the scientific work and spirit of the Association, and shall constantly study and strive to make each annual session a stepping-stone to future ones of higher interest.

SEC. 5. It shall consider and advise as to the material interests of the profession, and of the public in those important matters wherein it is dependent on the profession, and shall use its influence to secure and enforce all proper medical and public health legislation, and to diffuse popular information in relation thereto.

SEC. 6. It shall make careful inquiry into the condition of the profession of each county in the State, and shall have authority to adopt such methods as may be deemed most efficient for building up and increasing the interest in such county societies as already exist, and for organizing the profession in counties where societies do not exist. It shall especially and systematically endeavor to promote friendly intercourse between physicians of the same locality, and shall continue these efforts until every physician in every county of the State who can be made reputable has been brought under medical society influence.

SEC. 7. It shall encourage post-graduate work in medical centers, as well as home study and research, and shall endeavor to have the results utilized and intelligently discussed in the county societies. With these ends in view, five years after the adoption of these By-Laws no voluntary paper shall be placed upon the annual program or be heard in the Associa-

tion which has not first been read in the county society of which the author is a member.

SEC. 8. It shall elect representatives to the House of Delegates of the American Medical Association in accordance with the Constitution and By-Laws of that body in such a manner that not more than one-half of the delegates shall be elected in any one year.

SEC. 9. It shall, upon application, provide and issue charters to county societies organized to conform to the spirit of this Constitution and By-Laws.

SEC. 10. In sparsely settled sections it shall have authority to organize the physicians of two or more counties into societies, to be designated by hyphenating the names of two or more counties so as to distinguish them from district and other classes of societies, and these societies, when organized and chartered, shall be entitled to all the privileges and representation provided herein for county societies, until such counties may be organized separately.

SEC. 11. It shall divide the State into fifteen councilor districts, and, when the best interests of the Association and profession will be promoted thereby, each a district medical society, and all members of component county societies, and no others, shall be members in such district societies. When so organized, from the presidents of such district societies shall be chosen the vice-presidents of this Association, and the presidents of the county societies of the district shall be the vice-presidents of such district societies.

SEC. 12. It shall have authority to appoint committees for special purposes from among members of the Association who are not members of the House of Delegates, and such committees may report to the House of Delegates in person, and may participate in the debate thereon.

SEC. 13. It shall approve all memorials and resolutions issued in the name of the Association before the same shall become effective.

SEC. 14. It shall present a summary of its proceedings to the last general meeting of each annual session, and shall publish the same.

CHAPTER V.

ELECTION OF OFFICERS.

SECTION 1. All elections shall be by secret ballot, and a majority of the votes cast shall be necessary to elect.

SEC. 2. The House of Delegates on the first day of the annual session shall select a Committee on Nominations, consisting of five delegates, no two of whom shall be from the same councilor district. It shall be the

duty of this committee to consult with the members of the Association and to hold one or more meetings, at which the best interests of the Association and of the profession of the State for the ensuing year shall be carefully considered. The committee shall report the result of its deliberations to the House of Delegates in the shape of a ticket, containing the names of three members for the office of president and of one member for each of the other offices to be filled at that annual session. No two candidates for president shall be named from the same county.

SEC. 3. The report of the Nominating Committee and the election of officers shall be the first order of business of the House of Delegates after the reading of the minutes on the morning of the last day of the general session.

SEC. 4. Nothing in this article shall be construed to prevent additional nominations being made by members of the House of Delegates.

CHAPTER VI.

DUTIES OF OFFICERS.

SECTION 1. The president shall preside at all meetings of the Association and of the House of Delegates; shall appoint all committees not otherwise provided for; shall deliver an annual address at such time as may be arranged; shall give a deciding vote in case of a tie, and shall perform such other duties as custom and parliamentary usage may require. He shall be the real head of the profession of the State during his term of office, and, as far as practicable, shall visit, by appointment, the various sections of the State and assist the councilors in building up the county societies, and in making their work more practical and useful.

SEC. 2. The vice-presidents shall assist the president in the discharge of his duties. In the event of his death, resignation or removal, the council shall select one of the vice-presidents to succeed him.

SEC. 3. The treasurer shall give bond for the trust reposed in him whenever the House of Delegates shall deem it requisite. He shall demand and receive all funds due the Association, together with the bequests and donations. He shall, under the direction of the House of Delegates, sell or lease any estate belonging to the Association, and execute the necessary papers; and shall, in general, subject to such direction, have the care and management of the fiscal affairs of the Association. He shall pay money out of the treasury only on a written order of the president, countersigned by the secretary; he shall subject his accounts to such examination as the House of Delegates may order, and he shall annually render an account of his doings and of the state of the funds in his hands. He shall charge on his

books the assessments against each component county society at the end of the fiscal year as furnished him by the State secretary; he shall collect and make proper credits for the same, and perform such other duties as may be assigned to him. The expenses of the treasurer in attending the annual sessions may be paid by the House of Delegates.

SEC. 4. The secretary, acting with the Committee on Scientific Work, shall prepare and issue the programs one month before the annual meeting, and attend all meetings of the Association and of the House of Delegates, and he shall keep minutes of their respective proceedings in separate record books. He shall be custodian of all record books and papers belonging to the Association, except such as properly belong to the treasurer, and shall keep account of and promptly turn over to the treasurer all funds of the Association which come into his hands and take his receipt for the same. He shall provide for the registration of the members and delegates at the annual sessions. He shall keep a card-index register of all the legal practitioners of the State by counties, noting on each his status in relation to his county society, and upon request shall transmit a copy of this list to the American Medical Association for publication. In so far as it is in his power he shall use the printed matter, correspondence and influence of his office to aid the councilors in the organization and improvement of the county societies, and in the extension of the power and usefulness of this Association. He shall conduct the official correspondence, notifying members of meetings, officers of their election, and committees of their appointment and duties. He shall act as chairman of the committees on scientific work and on publication. He shall employ such assistants as may be ordered by the council or House of Delegates. He shall annually make a report of his doings to the House of Delegates.

In order that the secretary may be enabled to give that amount of time to his duties which will permit of his becoming proficient, it is desirable that he should receive some compensation. The amount of his salary shall be fixed by the House of Delegates.

CHAPTER VII.

COUNCIL.

SECTION 1. The council shall hold daily meetings during the annual session of the Association and at such other times as necessity may require, subject to the call of the chairman or on petition of three councilors. It shall meet on the last day of the annual session of the Association for reorganization and for the outlining of work for the ensuing year. At this meeting it shall elect a chairman and secretary, and the latter shall keep

a record of its proceedings. It shall, through its chairman, make an annual report to the House of Delegates at such time as may be provided.

SEC. 2. Each councilor shall be organizer, peacemaker and censor for his district. He shall visit each county in his district at least once a year for the purpose of organizing component societies where none exist, for inquiring into the condition of the profession, and for improving and increasing the zeal of the county societies and their members. He shall make an annual report of his doings, and of the condition of the profession of each county in his district to each annual session of the House of Delegates. The necessary traveling expenses incurred by such councilor in the line of the duties herein imposed may be allowed by the House of Delegates upon a proper itemized statement, but this shall not be construed to include his expense in attending the annual session of the Association.

SEC. 3. Collectively the council shall be the Board of Censors of the Association. It shall consider all questions involving the rights and standing of members, whether in relation to other members, to the component societies, or to this Association. All questions of an ethical nature brought before the House of Delegates or the general meeting shall be referred to the council without discussion. It shall hear and decide all questions of discipline affecting the conduct of members or of a county society, on which an appeal is taken from the decision of an individual councilor. Its decision in all such cases shall be final.

SEC. 4. The council shall have the right to communicate the views of the profession and of the Association in regard to health, sanitation and other important matters to the public and the lay press. Such communications shall be officially signed by the chairman and secretary of the council as such.

CHAPTER VIII.

COMMITTEES.

SECTION 1. The standing committees shall be as follows:

A Committee on Scientific Work.

A Committee on Public Policy and Legislation.

A Committee on Publication.

A Committee on Nominations.

A Committee on Arrangements, and such other committees as may be necessary. Such committees shall be elected by the House of Delegates, unless otherwise provided.

SEC. 2. The Committee on Scientific work shall consist of three members, of which the secretary shall be a member and chairman, and shall determine the character and scope of the scientific proceedings of the Asso-

ciation for each session, subject to the instructions of the House of Delegates or of the Association, or to the provisions of the Constitution and By-Laws. Previous to each annual session it shall prepare and issue a program announcing the order in which papers, discussions and other business shall be presented, which shall be adhered to by the Association as nearly as practicable.

SEC. 3. The Committee on Public Policy and Legislation shall consist of three members and the president and secretary. Under the direction of the House of Delegates it shall represent the Association in securing and enforcing legislation in the interest of the public health and scientific medicine. It shall keep in touch with professional and public opinion, shall endeavor to shape legislation so as to secure the best results for the whole people, and shall utilize every organized influence of the professionn to promote the general influence in local, State and national affairs and elections. Its work shall be done with the dignity becoming a great profession and with that wisdom which will make effective its power and influence. It shall have authority to be heard before the entire Association on questions of great concern at such time as may be arranged during the annual session.

SEC. 4. The Committee on Publication shall consist of three members, of which the secretary shall be one and chairman, and shall have referred to it all reports on scientific subjects, and all scientific papers and discussions heard before the Association. It shall be empowered to curtail or abstract papers and discussions, and any paper referred to it which may not be suitable for publication may be returned to the author. The committee shall have authority to arrange for the publication and distribution of the Transactions. All papers read before the Association shall be its property.

SEC. 5. The Committee on Nominations shall be appointed and perform its duties in accordance with the provisions of Chapter V, Sections 2 and 3 of these By-Laws.

SEC. 6. The Committee on Arrangements shall consist of the component society in the territory in which the annual session is to be held. It shall, by committees of its own selection, provide suitable accommodations for the meeting-places of the Association and of the House of Delegates, and of their respective committees, and shall have general charge of all the arrangements. Its chairman shall report an outline of the arrangements to the secretary for publication in the program and shall make additional announcements during the session as occasion may require.

CHAPTER IX.

ASSESSMENTS AND EXPENDITURES.

SECTION 1. An assessment of two dollars ($2.00) per capita on the membership of the component societies is hereby made the annual dues of this Association. The secretary of each county society shall forward its assessment together with its roster of all officers and members, list of delegates and list of non-affiliated physicians of the county to the secretary of this Association thirty days in advance of each annual session.

SEC. 2. Any county society which fails to pay its assessment, or make the reports required, on or before the date above stated, shall be held as suspended, and none of its members or delegates shall be permitted to participate in any of the business or proceedings of the Association or of the House of Delegates until such requirements have been met.

SEC. 3. All motions or resolutions appropriating money shall specify a definite amount, or so much thereof as may be necessary for the purpose indicated, and must be approved by the council and House of Delegates on a call for the ayes and noes.

CHAPTER X.

RULES OF CONDUCT.

The Principles of Medical Ethics of the American Medical Association shall govern the conduct of members in their relations to each other and to the public.

CHAPTER XI.

RULES OF ORDER.

The deliberations of this Association shall be governed by parliamentary usage as contained in Roberts's Rules of Order, unless otherwise determined by a vote of its respective bodies.

CHAPTER XII.

COUNTY SOCIETIES.

SECTION 1. All county societies now in affiliation with this Association or those that may hereafter be organized in this State, which have adopted principles of organization not in conflict with this Constitution and By-Laws, shall, upon application to the council, receive a charter from and become a component part of this Association.

SEC. 2. As rapidly as can be done after the adoption of this Constitu-

tion and By-Laws, a medical society shall be organized in every county in the State in which no component society exists, and charters shall be issued thereto.

SEC. 3. Charters shall be issued only on approval of the council or House of Delegates and shall be signed by the president and secretary of this Association. The council or House of Delegates shall have authority to revoke the charter of any component county society whose actions are in conflict with the letter or spirit of this Constitution and By-Laws.

SEC. 4. Only one component medical society shall be chartered in any county. Where more than one county society exists, friendly overtures and concessions shall be made, with the aid of the councilor for the district if necessary, and all of the members brought into one organization. In case of failure to unite, an appeal may be made to the council, which shall decide what action shall be taken.

SEC. 5. Each county society shall judge of the qualification of its own members, but as such societies are the only portals to this Association and to the American Medical Association, every reputable white and legally registered physician who is practicing, or who will agree to practice, non-sectarian medicine shall be entitled to membership. Before a charter is issued to any county society, full and ample notice and opportunity shall be given to every such physician in the county to become a member.

SEC. 6. Any physician who may feel aggrieved by the action of the society of his county in refusing him membership, or in suspending or expelling him, shall have the right of appeal to the council, which, upon a majority vote, may permit him to become a member of an adjacent county society.

SEC. 7. In hearing appeals the council may admit oral or written evidence as in its judgment will best and most fairly present the facts, but in case of every appeal, both as a board and as individual councilors in district and county work, efforts at conciliation and compromise shall precede all such hearings.

SEC. 8. When a member in good standing in a component society moves to another county in this State, his name, on request, shall be transferred without cost to the roster of the county society into whose jurisdiction he moves.

SEC. 9. A physician living on or near a county line may hold his membership in that county most convenient for him to attend, on permission of the society in whose jurisdiction he resides.

SEC. 10. Each county society shall have general direction of the affairs of the profession in the county, and its influence shall be constantly exerted for bettering the scientific, moral and material condition of every physician

in the county; and systematic efforts shall be made by each member, and by the society as a whole, to increase the membership until it embraces every qualified physician in the county.

SEC. 11. Frequent meetings shall be encouraged, and the most attractive programs arranged that are possible. The younger members shall be especially encouraged to do post-graduate and original research work, and to give the society the first benefit of such labors. Official position and other preferments shall be unstintingly given to such members.

SEC. 12. At the time of the annual election of officers each county society shall elect a delegate or delegates to represent it in the House of Delegates of this Association, in the proportion of one delegate to each one hundred members or fraction thereof, and the secretary of the society shall send a list of such delegates to the secretary of the Association, at least ten days before the annual sessions.

SEC. 13. The secretary of each county society shall keep a roster of its members and a list of the non-affiliated registered physicians of the county, in which shall be shown the full name, address, college and date of graduation, date of license to practice in this State, and such other information as may be deemed necessary. He shall furnish an official report containing such information, on blanks supplied him for the purpose, to the secretary of this Association, thirty days in advance of each annual session, and at the same time that the dues accruing from the annual assessment are sent in. In keeping such roster the secretary shall note any changes in the personnel of the profession by death, or by removal to or from the county, and in making his annual report he shall be certain to account for every physician who has lived in the county during the year.

CHAPTER XIII.

AMENDMENTS.

These By-Laws may be amended at any annual session by a majority vote of all the delegates present at that session, after the amendment has laid on the table for one day.

APPENDIX.

The State shall be divided into the following Councilor Districts, subject to revision by the House of Delegates:

No. 1. El Paso District, composed of the following counties: Brewster, El Paso, Jeff Davis, Loving, Pecos, Presidio, Reeves, Ward, and Winkler.

No. 2. Big Springs District, embracing the following counties: Andrews, Borden, Cochran, Crane, Crosby, Dawson, Dickens, Ector, Fisher, Gaines, Garza, Glasscock, Haskell, Howard, Hockley, Jones, Kent, King, Knox, Lynn, Martin, Midland, Mitchell, Nolan, Scurry, Stonewall, Taylor, Terry, Upton, and Yoakum.

No. 3. Panhandle District, embracing the following counties: Armstrong, Bailey, Briscoe, Castro, Carson, Cottle, Childress, Collingsworth, Deaf Smith, Dallam, Donley, Floyd, Foard, Gray, Hale, Hall, Hardeman, Hemphill, Hutchinson, Hansford, Hartley, Lamb, Lipscomb, Lubbock, Motley, Moore, Ochiltree, Oldham, Parmer, Potter, Randall, Roberts, Sherman, Swisher, and Wheeler.

No. 4. San Angelo District, embracing the following counties: Brown, Coke, Concho, Crockett, Coleman, Irion, Kimble, Menard, McCulloch, Runnels, Schleicher, Sterling, Sutton, and Tom Green.

No. 5. San Antonio or Western District, embracing the following counties: Atascosa, Bandera, Bexar, Comal, Dimmit, Edwards, Frio, Guadalupe, Gillespie, Karnes, Kendall, Kerr, Kinney, LaSalle, Maverick, Medina, Uvalde, Val Verde, Wilson, and Zavala.

No. 6. Corpus Christi or Southwest District, embracing the following counties: Aransas, Bee, Cameron, Duval, Goliad, Hidalgo, Live Oak, McMullen, Nueces, Refugio, San Patricio, Starr, Webb, and Zapata.

No. 7. Austin District, embracing the following counties: Bastrop, Blanco, Burnet, Caldwell, Hays, Lee, Llano, Mason, San Saba, Travis, and Williamson.

No. 8. De Witt District, embracing the following counties: Calhoun, Colorado, De Witt, Fayette, Gonzales, Jackson, Lavaca, Matagorda, Victoria, and Wharton.

No. 9. South Texas District, embracing the following counties: Austin, Brazoria, Chambers, Fort Bend, Galveston, Harris, Montgomery, Waller, and Washington.

No. 10. Southeast Texas District, embracing the following counties: Angelina, Hardin, Jefferson, Jasper, Liberty, Nacogdoches, Newton, Orange, Polk, Sabine, San Augustine, San Jacinto, Shelby, and Tyler.

No. 11. Brazos Valley District, embracing the following counties: Brazos, Burleson, Grimes, Houston, Leon, Madison, Milam, Robertson, Trinity, and Walker.

No. 12. Central Texas District, embracing the following counties: Bell, Bosque, Comanche, Coryell, Falls, Freestone, Hamilton, Hill, Lampasas, Limestone, McLennan, Mills, and Navarro.

No. 13. Northwest Texas District, embracing the following counties: Archer, Baylor, Callahan, Clay, Eastland, Jack, Palo Pinto, Shackelford, Stephens, Throckmorton, Wichita, Wilbarger, and Young.

No. 14. North Texas District, embracing the following counties: Collin, Cooke, Dallas, Delta, Denton, Ellis, Erath, Fannin, Grayson, Hood, Hopkins, Hunt, Johnson, Kaufman, Lamar, Montague, Parker, Rains, Rockwall, Somervell, Tarrant, Van Zandt, and Wise.

No. 15. Northeast District, embracing the following counties: Anderson, Bowie, Camp, Cass, Cherokee, Franklin, Gregg, Marion, Harrison, Morris, Panola, Red River, Rusk, Smith, Titus, Upshur, Wood and Henderson.

PRINCIPLES OF MEDICAL ETHICS.

PREFACE.

At the annual meeting of the American Medical Association, held in New Orleans, the House of Delegates unanimously adopted, on May 7, 1903, the "Principles of Medical Ethics" recommended by its committee, and ordered that the following extract from the report of the Special Committee on Revision of the Code of Medical Ethics be printed as an explanatory preface to these "principles":

"The caption 'Principles of Medical Ethics' has been substituted for 'Code of Medical Ethics.' Inasmuch as the American Medical Association may be conceived to hold a relation to the constituent State associations analogous to that of the United States through its constitution to the several States, the committee deemed it wiser to formulate the principles of medical ethics without definite reference to code or penalties. Large discretionary powers are thus left to the respective State and Territorial societies to form such codes and establish such rules for the professional conduct of their members as they may consider proper, provided, of course, that there shall be no infringement of the established ethical principles of this Association."

The American Medical Association promulgates as a suggestive and advisory document the following:

CHAPTER I.

THE DUTIES OF PHYSICIANS TO THEIR PATIENTS.

The Physician's Responsibility.—SECTION 1. Physicians should not only be ever ready to obey the calls of the sick and the injured, but should be mindful of the high character of their mission and of the responsibilities they must incur in the discharge of momentous duties. In their ministrations they should never forget that the comfort, the health and the lives of those entrusted to their care depend on skill, attention and fidelity. In deportment they should unite tenderness, cheerfulness and firmness, and thus inspire all sufferers with gratitude, respect and confidence. These observances are the most sacred because, generally, the

only tribunal to adjudge penalties for unkindness, carelessness or neglect is their own conscience.

Humanity, Delicacy and Secrecy Needed.—SEC. 2. Every patient committed to the charge of a physician should be treated with attention and humanity, and reasonable indulgence should be granted to the caprices of the sick. Secrecy and delicacy should be strictly observed; and the familiar and confidential intercourse to which physicians are admitted, in their professional visits, should be guarded with the most scrupulous fidelity and honor.

Secrecy to be Inviolate.—SEC. 3. The obligation of secrecy extends beyond the period of professional services; none of the privacies of individual or domestic life, no infirmity of disposition or flaw of character observed during medical attendance, should ever be divulged by physicians, except when imperatively required by the laws of the State. The force of the obligation of secrecy is so great that physicians have been protected in its observance by courts of justice.

Frequency of Visits.—SEC. 4. Frequent visits to the sick are often requisite, since they enable the physican to arrive at a more perfect knowledge of the disease, and to meet promptly every change which may occur. Unnecessary visits are to be avoided, as they give undue anxiety to the patient; but to secure the patient against irritating suspense and disappointment the regular and periodical visits of the physician should be made as nearly as possible at the hour when they may be reasonably expected by the patient.

Honesty and Wisdom in Prognosis.—SEC. 5. Ordinarily, the physician should not be forward to make gloomy prognostications, but should not fail, on proper occasion, to give timely notice of dangerous manifestations to the friends of the patient; and even to the patient, if absolutely necessary. This notice, however, is at times so peculiarily alarming when given by the physician, that its deliverance may often be preferably assigned to another person of good judgment.

Encouragement of Patients.—SEC. 6. The physician should be a minister of hope and comfort to the sick, since life may be lengthened or shortened not only by the acts, but by the words or manner of the physician, whose solemn duty is to avoid all utterances and actions having a tendency to discourage and depress the patient.

Incurable Cases Not to Be Neglected.—SEC. 7. The medical attendant ought not to abandon a patient because deemed incurable; for continued attention may be highly useful to the sufferer and comforting to the relatives, even in the last period of the fatal malady, by alleviating pain and by soothing mental anguish.

Judicious Counsel to Patients.—SEC. 8. The opportunity which a physician has of promoting and strengthening the good resolutions of patients suffering under the consequences of evil conduct ought never to be neglected. Good counsels, or even remonstrances, will give satisfaction, not offense, if they be tactfully proffered and evince a genuine love of virtue, accompanied by a sincere interest in the welfare of the person to whom they are addressed.

CHAPTER II.

THE DUTIES OF PHYSICIANS TO EACH OTHER AND TO THE PROFESSION AT LARGE.

ARTICLE I. DUTIES FOR THE SUPPORT OF PROFESSIONAL CHARACTER.

Obligation to Maintain Honor of the Profession.—SECTION 1. Everyone on entering the profession, and thereby becoming entitled to full professional fellowship, incurs an obligation to uphold its dignity and honor, to exalt its standing and to extend the bounds of its usefulness. It is inconsistent with the principles of medical science and it is incompatible with honorable standing in the profession for physicians to designate their practice as based on an exclusive dogma or a sectarian system of medicine.

Observation of Professional Rules.—SEC. 2. The physician should observe strictly such laws as are instituted for the government of the members of the profession; should honor the fraternity as a body; should endeavor to promote the science and art of medicine and should entertain a due respect for those seniors who, by their labors, have contributed to its advancement.

Duty to Join Medical Organization.—SEC. 3. Every physician should identify himself with the organized body of his profession as represented in the community in which he resides. The organization of local or county medical societies, where they do not exist, should be effected, as far as practicable. Such county societies, constituting as they do the chief element of strength in the organization of the profession, should have the active support of their members and should be made instruments for the cultivation of fellowship, for the exchange of professional experience, fo rthe advancement of medical knowledge, for the maintenance of ethical standards, and for the promotion in general of the interests of the profession and the welfare of the public.

County Societies to Affiliate with Higher Organizations.—SEC. 4. All county medical societies thus organized ought to place themselves in affiliation with their respective State associations, and these, in turn, with the American Medical Association.

Purity of Character and Morality Required.—SEC. 5. There is no profession from the members of which greater purity of character and a higher standard of moral excellence are required than the medical; and to attain such eminence is a duty every physician owes alike to the profession and to patients. It is due to the patients, as without it their respect and confidence can not be commanded; and to the profession, because no scientific attainments can compensate for the want of correct moral principles.

Temperance in all Things.—SEC. 6. It is incumbent on physicians to be temperate in all things, for the practice of medicine requires the unremitting exercise of a clear and vigorous understanding; and in emergencies—for which no physician should be unprepared—a steady hand, an acute eye and an unclouded mind are essential to the welfare and even to the life of a human being.

Advertising Methods to Be Avoided.—SEC. 7. It is incompatible with honorable standing in the profession to resort to public advertisement or private cards inviting the attention of persons affected with particular diseases; to promise radical cures; to publish cases or operations in the daily prints, or to suffer such publications to be made; to invite laymen (other than relatives who may desire to be at hand) to be present at operations; to boast of cures and remedies; to adduce certificates of skill and success, or to employ any of the other methods of charlatans.

Patents and Secret Nostrums.—SEC. 8. It is equally derogatory to professional character for physicians to hold patents for any surgical instruments or medicines; to accept rebates on prescriptions or surgical appliances; to assist unqualified persons to evade legal restrictions governing the practice of medicine; or to dispense, or promote the use of, secret medicines, for if such nostrums are of real efficacy, any concealment regarding them is inconsistent with beneficence and professional liberality, and if mystery alone give them public notoriety, such craft implies either disgraceful ignorance or fraudulent avarice. It is highly reprehensible for physicians to give certificates attesting the efficacy of secret medicines, or other substances used therapeutically.

ARTICLE II. PROFESSIONAL SERVICES OF PHYSICIANS TO EACH OTHER.

Physicians Dependent on Each Other.—SECTION 1. Physicians should not, as a general rule, undertake the treatment of themselves, nor of members of their family. In such circumstances they are peculiarly dependent on each other; therefore, kind offices and professional aid should always be cheerfully and gratuitously afforded. These visits ought not, however, be obtrusively made, as they may give rise to embarrassment

or interfere with that free choice on which such confidence depends.

Gratuitous Service to Fellow Physicians.—SEC. 2. All practicing physicians and their immediate family dependants are entitled to the gratuitous services of any one or more of the physicians residing near them.

Compensation for Expenses.—SEC. 3. When a physician is summoned from a distance to the bedside of a colleague in easy financial circumstances, a compensation, proportionate to traveling expenses and to the pecuniary loss entailed by absence from the accustomed field of professional labor, should be made by the patient or relatives.

One Physician to Take Charge.—SEC. 4. When more than one physician is attending another, one of the number should take charge of the case, otherwise the concert of thought and action so essential to wise treatment can not be assured.

Attention to Absent Physician's Patients.—SEC. 5. The affairs of life, the pursuit of health and the various accidents and contingencies to which a physician is peculiarly exposed sometimes require the temporary withdrawal of this physician from daily professional labor and the appointment of a colleague to act for a specified time. The colleague's compliance is an act of courtesy which should always be performed with the utmost consideration for the interest and character of the family physician.

ARTICLE III. THE DUTIES OF PHYSICIANS IN REGARD TO CONSULTATIONS.

The Broadest Humanity in Emergencies Required.—SECTION 1. The broadest dictates of humanity should be obeyed by physicians whenever and wherever their services are needed to meet the emergencies of disease or accident.

Consultations Should Be Promoted.—SEC. 2. Consultations should be promoted in difficult cases, as they contribute to confidence and more enlarged views of practice.

Punctuality in Consultations.—SEC. 3. The utmost punctuality should be observed in the visits of physicians when they are to hold consultations, and this is generally practicable, for society has been so considerate as to allow the plea for a professional engagement to take precedence over all others.

Necessary Delays.—SEC. 4. As professional engagements may sometimes times cause delay in attendance, the physician who first arrives should wait for a reasonable time, after which the consultation should be considered as postponed to a new appointment.

Good Feeling and Candor in Consultations.—SEC. 5. In consultations no insincerity, rivalry or envy should be indulged; candor, probity and

all due respect should be observed toward the physician in charge of the case.

Unauthorized Statements or Discussions.—SEC. 6. No statement or discussion of the case should take place before the patient or friends, except in the presence of all the physicians attending, or by their common consent; and no opinions or prognostications should be delivered which are not the result of previous deliberation and concurrence.

Attending Physician May Vary Treatment.—SEC. 7. No decision should restrain the attending physician from making such subsequent variations in the mode of treatment as any unexpected change in the character of the case may demand. But at the next consultation reasons for the variations should be stated. The same privilege, with its obligations, belongs to the consultant when sent for in an emergency during the absence of the family physician.

Attending Physician to Prescribe.—SEC. 8. The attending physician, at any time, may prescribe for the patient; not so the consultant, when alone, except in case of emergency or when called from a considerable distance. In the first instance the consultant should do what is needed and in the second should do no more than make an examination of the patient and leave a written opinion, under seal, to be delivered to the attending physician.

Discussions in Consultation Confidential.—SEC. 9. All discussions in consultation should be held as confidential. Neither by words nor by manner should any of the participants in a consultation assert or intimate that any part of the treatment pursued did not receive his assent.

Conflicts of Opinion.—SEC. 10. It may happen that two physicians can not agree in their views of the nature of the case and of the treatment to be pursued. In the event of such disagreement a third physician should, if practicable, be called in. None but the rarest and most exceptional circumstances would justify the consultant in taking charge of the case. He should not do so merely on the solicitation of the patient or friends.

Consultant to Scrupulously Regard Rights of Attending Physician.—SEC. 11. A physician who is called in consultation should observe the most honorable and scrupulous regard for the character and standing of the attending physician, whose conduct of the case should be justified, as far as can be, consistently with a conscientious regard for truth, and no hint or insinuation should be thrown out which would impair the confidence reposed in the attending physician.

ARTICLE IV. DUTIES OF PHYSICIANS IN CASES OF INTERFERENCE.

Qualifications the Only Basis of Practice.—SECTION 1. Medicine being a liberal profession, those admitted to its ranks should found their expectations of practice especially on the character and extent of their medical education.

Intercourse with Patients of Other Physicians.—SEC. 2. The physician, in his intercourse with a patient under the care of another physician, should observe the strictest caution and reserve; should give no disingenuous hints relative to the nature and treatment of the patient's disorder, nor should the course of conduct of the physician, directly or indirectly, tend to diminish the trust reposed in the attending physician.

Circumspection as Regards Visits.—SEC. 3. The same circumspection should be observed when, from motives of business or friendship, a physician is prompted to visit a person who is under the direction of another physician. Indeed, such visits should be avoided, except under peculiar circumstances; and when they are made, no inquiries should be instituted relative to the nature of the disease, or the remedies employed, but the topics of conversation should be as foreign to the case as circumstances will admit.

Duty as to Calls to Patients of Other Physicians.—SEC. 4. A physician ought not to take charge of, or prescribe for, a patient who has recently been under the care of another physician, in the same illness, except in case of a sudden emergency, or in consultation with the physician previously in attendance, or when that physician has relinquished the case or has been dismissed in due form.

Criticisms to Be Avoided.—SEC. 5. The physician acting in conformity with the preceding section should not make damaging insinuations regarding the practice adopted, and, indeed, should justify it if consistent with truth and probity; for it often happens that patients become dissatisfied when they are not immediately relieved, and, as many diseases are naturally protracted, the seeming want of success in the first stage of treatment affords no evidence of a lack of professional knowledge or skill.

Emergency Cases.—SEC. 6. When a physician is called to an urgent case, because the family attendant is not at hand, unless assistance in consultation is desired, the former should resign the care of the patient immediately on the arrival of the family physician.

Duty When Called with Other Physicians.—SEC. 7. It often happens, in cases of sudden illness, and of accidents and injuries, owing to the alarm and anxiety of friends, that several physicians are simultaneously summoned. Under these circumstances, courtesy should assign the patient

to the first who arrives, and who, if necessary, may invoke the aid of some of those present. In such case, however, the acting physician should request that the family physician be called, and should withdraw unless requested to continue in attendance.

Case to Be Relinquished to Regular Attendant.—SEC. 8. Whenever a physician is called to the patient of another physician during the enforced absence of that physician the case should be relinquished on the return of the latter.

Emergency Attention and Advice.—SEC. 9. A physician, while visiting a sick person in the country, may be asked to see another physician's patient because of a sudden aggravation of the disease. On such an occasion the immediate needs of the patient should be attended to and the case relinquished on the arrival of the attending physician.

Substitute Obstetric Work.—SEC. 10. When a physician who has been engaged to attend an obstetric case is absent and another is sent for, delivery being accomplished during the vicarious attendance, the acting physician is entitled to the professional fee, but must resign the patient on the arrival of the physician first engaged.

ARTICLE V. DIFFERENCES BETWEEN PHYSICIANS.

Arbitration of Differences.—SECTION 1. Diversity of opinion and opposition of interests may, in the medical as in other professions, sometimes occasion controversy and even contention. Whenever such unfortunate cases occur and can not be immediately adjusted, they should be referred to the arbitration of a number of impartial physicians.

Reserve Toward Public on Certain Professional Questions.—SEC. 2. A peculiar reserve must be maintained by physicians toward the public in regard to some professional questions, and as there exist many points in medical ethics and etiquette through which the feelings of physicians may be painfully assailed in their intercourse, and which can not be understood or appreciated by general society, neither the subject matter of their differences nor the adjudication of the arbitration should be made public.

ARTICLE VI. COMPENSATION.

The Limits of Gratuitous Service.—SECTION 1. By the members of no profession are eleemosynary services more liberally dispensed than by the medical, but justice requires that some limits should be placed to their performance. Poverty, mutual professional obligations, and certain of the public duties named in Sections 1 and 2, of Chapter III, should always be recognized as presenting valid claims for gratuitous services;

but neither institutions endowed by the public or the rich, or by societies for mutual benefit, for life insurance, or for analogous purposes, nor any profession or occupation, can be admitted to possess such privilege.

Certifying or Testifying to Be Paid For.—SEC. 2. It can not be justly expected of physicians to furnish certificates of inability to serve on juries, or to perform militia duty; to testify to the state of health of persons wishing to insure their lives, obtain pensions, or the like, without due compensation. But to persons in indigent circumstances such services should always be cheerfully and freely accorded.

Fee Bills.—SEC. 3. Some general rules should be adopted by the physicians in every town or district relative to the minimum pecuniary acknowledgment from their patients; and it should be deemed a point of honor to adhere to these rules with as much uniformity as varying circumstances will admit.

Giving or Receiving Commissions Condemned.—SEC. 4. It is derogatory to professional character for physicians to pay or offer to pay commissions to any person whatsoever who may recommend to them patients requiring general or special treatment or surgical operations. It is equally derogatory to professional character for physicians to solicit or to receive such commissions.

CHAPTER III.

THE DUTIES OF THE PROFESSION TO THE PUBLIC.

Duties as to Public Hygiene, Etc.—SECTION 1. As good citizens it is the duty of physicians to be very vigilant for the welfare of the community, and to bear their part in sustaining its laws, institutions and burdens; especially should they be ready to co-operate with the proper authorities in the administration and the observance of sanitary laws and regulations, and they should also be ever ready to give counsel to the public in relation to subjects especially appertaining to their profession, as on questions of sanitary police, public hygiene and legal medicine.

Enlightenment of Public on Sanitary Matters. Duties in Epidemics.—SEC. 2. It is the province of physicians to enlighten the public in regard to quarantine regulations; to the location, arrangement and dietaries of hospitals, asylums, schools, prisons and similar institutions; in regard to measures for the prevention of epidemic and contagious diseases; and when pestilence prevails, it is their duty to face the danger, and to continue their labors for the alleviation of the suffering people, even at the risk of their own lives.

Physicians as Witnesses.—SEC. 3. Physicians when called on by legally

constituted authorities, should always be ready to enlighten inquests and courts of justice on subjects strictly medical, such as involve questions relating to sanity, legitimacy, murder by poison or other violent means, and various other subjects embraced in the science of medical jurisprudence. It is but just, however, for them to expect due compensation for their services.

Enlightenment of the Public as to Charlatans.—SEC. 4. It is the duty of physicians who are frequent witnesses of the great wrongs committed by charlatans and of the injury to health and even destruction of life caused by the use of their treatment, to enlighten the public on these subjects and make known the injuries sustained by the unwary from the devices and pretensions of artful imposters.

Relations to Pharmacists.—SEC. 5. It is the duty of physicians to recognize and by legitimate patronage to promote the profession of pharmacy, on the skill and proficiency of which depends the reliability of remedies, but any pharmacist who, although educated in his own profession, is not a qualified physician, and who assumes to prescribe for the sick, ought not to receive such countenance and support. Any druggist or pharmacist who dispenses deteriorated or sophisticated drugs or who substitutes one remedy for another designated in a prescription ought thereby to forfeit the recognition and influence of physicians.

COUNTY SOCIETIES FORMING THE STATE ASSOCIATION, AUGUST 1, 1904.

County.	Members.	President.	Secretary.
Anderson	20	J. M. Colley, Palestine	Geo. R. Howard, Palestine.
Angelina	15	L. Mantooth, Lufkin	R. B. Bledsoe, Lufkin.
Austin	15	E. G. Magruder, Sealy	Otto E. Steck, Bellville.
Bastrop	18	J. H. E. Powell, Smithville	W. R. P. Thompson, Smithville.
Baylor	7	O. F. Johnson, Seymour	J. A. Richardson, Seymour.
Bee	9	D. M. Thurston, Beeville	G. M. Stephens, Beeville.
Bell	42	J. M. Frazier, Belton	J. M. McCutchan, Temple.
Bexar	103	W. B. Russ, San Antonio	J. H. Burleson, San Antonio.
Bowie	23	C. C. Davis, New Boston	T. F. Kittrell, Texarkana.
Brazoria	7	S. B. Maxey, Angleton	M. L. Weems, Jr., Brazoria.
Brazos	7	J. M. Nicks, Stone City	P. M. Raysor, Bryan.
Brown	20	M. W. Bynum, Brownwood	J. W. McCarver, Brownwood.
Burleson	8	J. P. Oliver, Caldwell	B. O. McLean, Caldwell.
Burnet	10	J. S. Brownlee, Burnet	E. M. Wood, Burnet.
Caldwell	18	J. B. Holt, Lockhart	A. A. Ross, Lockhart.
Cameron	7	F. J. Combe, Brownsville	L. F. Layton, Brownsville.
Camp	19	Henry Thornton, Pittsburg	F. H. Ellington, Pittsburg.
Cass	19	V. S. Jeter, Atlanta	R. L. McClung, Atlanta.
Cherokee	18	H. V. Collins, Jacksonville	J. B. Ramsey, Alto.
Coleman	16	C. M. Alexander, Coleman	J. G. Pope, Coleman.
Collin	40	J. N. Mendenhall, Plano	O. H. Kirkpatrick, McKinney.
Colorado	19	R. H. Harrison, Sr., Columbus	C. M. Blair, Columbus.
Comal	6	H. Leonards, New Braunfels	A. H. Noster, New Braunfels.
Comanche	17	L. B. Thomas, Comanche	R. B. Sellers, Comanche.
Cooke	23	J. E. Gilcreest, Gainesville	C. C. Walker, Gainesville.
Dallas	72	V. P. Armstrong, Dallas	E Dunlap, Dallas.
Deaf Smith - Randall - Castro.	6	C. P. Estes, Hereford	G. F. LcGrand, Hereford.
Delta	25	C. M. Harrison, Cooper	C. C. Taylor, Cooper.
DeWitt	16	W. C. Swain, Cuero	O. J. Mugge, Cuero.
Denton	29	J. M. Inge, Denton	M. L. Martin, Denton.
Donley	7	H. J. Winn, Clarendon	S. J. White, Clarendon.
Eastland	16	C. S. Vance, Cisco	E. B. Gilbert, Gorman.
Ector - Midland - Howard - Martin - Borden - Glasscock - Howard.	7	J. G. Wright, Big Springs	F. P. Miller, El Paso.
Ellis	49	J. C. Loggins, Ennis	S. C. Gage, Ennis.
El Paso	38	J. A. Rawlings, El Paso	G. Wehrle, El Paso.
Erath	16	T. J. Farmer, Dublin	M. W. Rogers, Alexander.
Falls	17	J. P. Barton, Mooreville	B. G. Ward, Marlin.
Fannin	44	R. E. Martin, Bonham	A. B. Kennedy, Bonham.
Fayette	22	H. A. Tutwiler, Flatonia	R. H. Seymour, Warrenton.
Fort Bend	6	J. C. Johnson, Richmond	S. M. Lister, Richmond.
Galveston	48	J. T. Moore, Galveston	J. C. Ralston, Galveston.
Gonzales	20	R. N. C. Tate, Gonzales	J. H. McCaleb, Gonzales.
Grayson	32	J. T. Wilson, Sherman	R. F. Miller, Sherman.
Guadalupe	12	M. B. Grace, Seguin	D. A. Watson, Seguin.
Gregg	12	W. M. Cole, Longview	W. B. Mackey, Longview.
Grimes	9	F. B. Johnston, Anderson	B. H. Bennett, Anderson.
Hale - Swisher - Floyd.	9	H. D. Barnes, Tulia	W. N. Wardlow, Plainview.
Hardeman - Childress - Foard	9	J. N. Albert, Childress	B. A. Dillard, Chillicothe.
Hardin	8	J. R. Ogden, Nona	E. D. Pope, Kountze.
Harris	56	E. M. Armstrong, Houston	J. E. Hodges, Houston.
Harrison	24	J. H. Taylor, Marshall	W. D. Jones, Marshall.
Hays	14	A. J. Beall, San Marcos	Terry Kinney, San Marcos.
Hill	30	J. T. Lawson, Files	J. M. Martin, Hillsboro.
Hood	7	J. R. Lancaster, Granbury	E. L. Menefee, Granbury.
Hopkins	14	S. B. Longino, Sulphur Springs	W. R. Shook, Emblem.
Houston	29	W. C. Lipscomb, Crockett	J. S. Wooters, Crockett.
Hunt	54	T. J. Milner, Greenville	M. L. Moody, Greenville.
Jack	7	J. W. McComb, Jacksboro	G. B. Wade, Jacksboro.

County.	Members.	President.	Secretary.
Jackson	5	W. T. Richmond, Edna	O. H. Radkey, Edna.
Jasper-Newton	8	H. R. Hancock, Jasper	T. E. Stone, Jasper.
Jefferson	24	W. W. Cunningham, Beaumont	Guy H. Reed, Beaumont.
Johnson	23	W. P. Alexander, Cleburne	J. M. Huddleston, Cleburne.
Jones - Haskell - Knox-King.	16	R. R. Shapard, Anson	Dee Williams, Anson.
Karnes	14	W. S. Pickett, Karnes City	W. A. King, Falls City.
Kaufman	46	W. A. Watkins, Kemp	W. J. Pollard, Kaufman.
Kerr - Kendall - G. B.	20	E. E. Palmer, Kerrville	C. C. Jones, Comfort.
Lamar	40	J. F. Dyer, Chicota	M. A. Walker, Paris.
Lampasas	15	J. D. Reed, Lampasas	J. E. Dildy, Lampasas.
Lavaca	16	J. E. Lay, Sr., Hallettsville	C. W. Letzerich, Sublime.
Lee	10	A. C. Conner, Lexington	S. G. Northrup, Giddings.
Leon	23	S. R. Burroughs, Buffalo	J. H. Joyce, Buffalo.
Limestone	7	W. C. Blalock, Kosse	T. A. Welch, Groesbeck.
Llano	8	W. Y. Fowler, Valley Spring	C. F. Darnell, Llano.
Madison	14	J. D. Jordan, Madisonville	A. H. Speer, Madisonville.
Marion	7	J. A. R. Moseley, Jefferson	Rogers Cocke, Jefferson.
Matagorda	6	J. E. Simons, Bay City	P. E Parker, Bay City.
Mason	5	R. J. Baze, Mason	S. J. Burleson, Mason.
Maverick	5	R. N. Lane, Eagle Pass	M. Duggan, Eagle Pass.
McLennan	31	R. E. Conger, China Springs	J. J. Dean, Waco.
Medina	7	J. R. Evans, Devine	J. T. FitzSimon, Castroville.
Milam	28	E. N. Shaw, Cameron	I. P. Sessions, Rockdale.
Mitchell-Scurry-Kent-Dickens.	11	W. H. Morrow, Dunn	W. R. Smith, Colorado.
Montague	33	J. G. Crump, St. Jo	S. Strong, Bowie.
Montgomery	17	W. P. Powell, Willis	R. F. Currie, Conroe.
Morris	8	D. J. Jenkins, Daingerfield	J. W. Bradfield, Daingerfield.
Nacogdoches	10	F. C. Ford, Nacogdoches	J. E. Mayfield, Nacogdoches.
Navarro	30	B. W. D. Hill, Dawson	W. T. Shell, Corsicana.
Nolan - Fisher - Stonewall.	11	A. M. Davidson, Roby	L. B. Roebuck, Sweetwater.
Nueces	12	A. E. Spohn, Corpus Christi	Henry Redmond, Corpus Christi.
Orange	11	J. Saunders, Orange	H. E. Seastrunk, Orange.
Panola	7	S. A. Woodward, Carthage	C. F. Hull, Carthage.
Palo Pinto	13	J. H. McCracken, Mineral Wells	R. L. Yeager, Mineral Wells
Parker	26	E. C. Foster, Whitt	C. McNelly, Weatherford.
Polk	10	W. K. McCordell, Livingston	W. B. Everett, Livingston.
Potter - Dallam - Roberts-Hartley	15	W. A. Lockett, Amarillo	L. E. Magnenat, Amarillo.
Red River	20	J. C. Foster, Clarksville	N. Watson, Clarksville.
Rockwall	13	J. F. Corry, Rockwall	J. L. Austin, Rockwall.
Robertson	7	W. S. Parker, Calvert	W. B. Briggs, Easterly.
Runnels	12	T. A. Rape, Ballinger	J. H. Herndon, Miles.
Rusk	10	A. D. Stroud, Henderson	J. E. Watkins, Henderson.
Sabine	7	W. C. Arthur, Bronson	R. D. Cousins, Bronson.
San Saba	9	S. W. Rimmer, San Saba	E. M. Burleson, Richland Sp'gs.
Shelby	17	J. H. Horn, Shelbyville	T. F. Whiteside, Timpson.
Smith	32	Irvin Pope, Tyler	A. Woldert, Tyler.
Stephens	10	N. W. Crain, Newcomb	H. L. Wilder, Albany.
Tarrant	40	I. L. Van Zandt, Fort Worth	L. A. Barber, Fort Worth.
Taylor	19	T. B. Bass, Abilene	J. B. Thomas, Abilene.
Titus	13	S. C. Crabtree, Mt. Pleasant	W. J. Mathews, Mt. Pleasant.
Tom Green	17	B. Cornick, San Angelo	L. O. G. Buchanan, San Angelo.
Travis	52	Ralph Steiner, Austin	M. M. Smith, Austin.
Trinity	10	J. S. McDowell, Groveton	W. J. McGee, Groveton.
Tyler	12	W. V. Stewart, Colmesneil	D. McMicken, Woodville.
Upsher	12	T. S. Ragland, Gilmer	J. F. Mattox, Gilmer.
Uvalde-Edwards	11	C. W. Watt, Uvalde	C. D. Dixon, Uvalde.
Val Verde-Kinney	8	J. B. Moeur, Del Rio	S. L. Boren, Del Rio.
Van Zandt	22	T. A. Martin, Grand Saline	O. M. Marchman, Grand Saline.
Victoria-Calhoun.	10	R. R. Hopkins, Victoria	W. A. Rape, Victoria.
Walker	7	J. W. Thomason, Huntsville	L. H. Bush, Huntsville.
Waller	8	L. L. Mahan, Hempstead	C. W. LeGrand, Hempstead.

County.	Members.	President.	Secretary.
Washington	13	J. T. Spann, Chappell Hill	T. J. Pier, Brenham.
Webb	8	H. J. Hamilton, Laredo.	E. H. Sauvignet, Laredo.
Wharton	13	G. L. Davidson, Wharton	J M. Andrews, Wharton.
Wichita	10	L. C. Tyson, Wichita Falls	E. A. Milam, Wichita Falls.
Wilbarger	7	J. E. Dodson, Vernon	R. W. Hix, Vernon.
Williamson	33	W. T. Jones, Georgetown	G. W. Foster, Georgetown.
Wilson	11	D. H. Houston, Floresville	J. V. Blake, Floresville.
Wise	22	J. A. Embry, Decatur	R. M. Walker, Decatur.
Wood	19	J. B. Goldsmith, Quitman	E. W. McCamish, Mineola.
Young	10	D. J. Newell, Eliasville	L. W. Price, Graham.

Total number of counties, 129.
Total Society membership, 2,393.

MEMBERS OF THE STATE MEDICAL ASSOCIATION OF TEXAS.

Name.	P. O. Address.
Abney, G. M.	Franklin.
Acheson, A. W.	Denison.
Adams, E. S.	Garrison.
Adams, J. W.	Robert Lee.
Adams, R. C.	Hawkins.
Addison, J. B.	Buckhorn.
Adkins, J. J.	Refugio.
Adkins, F. A.	Leesburg.
Ahlers, O. C.	Sherman.
Alderidge, H. W.	Rockett.
Aldenhoven, Carl.	Gonzales.
Albert, J. W.	Childress.
Alexander, R. J.	Troy.
Alexander, E.	El Paso.
Alexander, C. M.	Coleman.
Alexander, J. M.	Abilene.
Alexander, S. M.	Abilene.
Alexander, W. H.	Ivanhoe.
Alexander, W. P.	Cleburne.
Alexander, B. D.	Manchaca.
Allen, R. W.	Dallas.
Allen, W. H.	Marlin.
Allen, G. W., Jr.	Flatonia.
Allen, J. H.	Justin.
Allen, Willard.	Harleton.
Allen, N. N.	Houston.
Allen, T. R.	Greenwood.
Allen, G. W.	Flatonia.
Allison, W. L.	San Antonio.
Allison, T. J.	Gladewater.
Allison, L. P.	Brownwood.
Allison, J. A.	Alto.
Allred, J. L.	Gough.
Anderson, W. H.	El Paso.
Anderson, R. B.	Sherman.
Anderson, M.	Lawrence.
Anderson, G. M.	Tanglewood.
Anderson, R. H.	Hewitt.
Anderson, J. C.	Granger.
Anderson, H. R.	Homer.
Anderson, U. B.	Brownwood.
Anderson, J. S.	Brady.
Andrews, V.	Valley View.
Andrews, R. C.	Floydada.
Andrews, J. M.	Wharton.
Applewhite, S. M.	Uvalde.
Armistead, R. L.	Jefferson.
Armstrong, V. P.	Dallas.
Armstrong, J. C.	Garland.
Armstrong, E. M.	Houston.
Armstrong, A. M.	Crawford.
Armstrong, J. A.	San Marcos.
Arnecke, C. A. H.	Arneckeville.
Arnold, B. F.	Greenville.
Arnold, J. J.	Huffsmith.
Arnold, W. T., Jr.	Hemphill.
Ardrey, L. L.	Bandera.
Arthur, W. C.	Bronson.
Arvin, H. T.	Greenville.
Aston, S. N.	Buffalo.
Atkins, W. E.	Pilot Point.
Atkinson, O. B.	Florence.
Atkinson, D. C.	Elgin.
Atkinson, R.	San Marcos.
Atkinson, D. T.	Del Rio.
Austin, J. L.	Rockwall.
Angier, E. L.	Huntsville.
Aycock, R. F.	Rosebud.
Aynesworth, K. H.	Waco.
Baines, L. W.	Brookshire.
Baird, J. C.	Big Springs.
Bailey, A. A.	Beaumont.
Bailey, R. H.	Gainesville.
Baker, W. T.	Midlothian.
Baird, R. W.	Dallas.
Baird, T. H.	Otto.
Baldridge, W. H.	Wylie.
Baldinger, W. H.	Galveston.
Baldesarelli, P.	San Antonio.
Baldwin, B. H.	Marshall.
Baldwin, J. E.	Dallas.
Baldwin, W. A.	Wildon.
Ball, H.	DeKalb.
Ball, S. C.	New Boston.
Ball, W. P.	Cleburne.
Ball, J. H.	Crystal Falls.

Name.	P. O. Address.
Baker, M. B.	Waco.
Barber, L. A.	Fort Worth.
Barber, T. H.	Sidney.
Barclay, A. P.	Beaumont.
Barker, W. L.	San Antonio.
Barham, J. H.	Garrison.
Barlow, J. R.	Roby.
Barnett, J. L.	Midlothian.
Barnett, G. W.	Reynolds.
Barnitz, H. D.	San Antonio.
Barnett, W. H.	Abilene.
Barnett, W. C.	Big Springs.
Barnes, F. L.	Trinity.
Barnes, L. M.	Thorndale.
Barnes, J. I.	Sabinal.
Barnes, H. D.	Tulia.
Barr, H. A.	Beaumont.
Barrell, C. C.	Houston.
Barton, J. P.	Mooreville.
Barton, R. W.	Temple.
Baldwin, A. P.	Tyler.
Barnhill, P. D.	Brenham.
Baskett, G. W.	Van Alstyne.
Bassett, J. W.	Cason.
Bass, T. B.	Abilene.
Bass, V. M.	Waxahachie.
Bass, J. D.	Pittsburg.
Bates, J. K.	Lafayette.
Batista, P.	San Antonio.
Batts, E. L.	San Angelo.
Baze, R. J.	Mason.
Baze, P. A.	Mason.
Beaumont, G. B.	Coleman.
Beakley, S. S.	Seguin.
Beasley, S. T.	Crockett.
Beall, A. J.	San Marcos.
Beall, E. F.	San Marcos.
Beall, J. A.	Center Point.
Bean, B. F.	Kirbyville.
Becker, Ed.	Brenham.
Beckmeyer, J. F.	Hondo.
Beckman, P. W.	Beaumont.
Beckman, A.	Oldenburg.
Beckman, P.	Warda.
Becton, Joe.	Greenville.
Beck, W. E.	DeKalb.
Becton, E. P.	Greenville.
Bedell, J. W.	Glenflora.
Bedford, G. W.	Paris.
Bedford, J. D.	Honey Grove.
Beddoe, A. F.	Garland.
Beeler, B. R.	Mineral Wells.
Behrens, C. L.	Cherokee.
Bell, R. B.	Roddy.
Bell, T. J.	Tyler.
Bell, J. H.	San Antonio.
Bell, M. C.	Wallis.
Bell, T. C.	Yorktown.
Bell, J. D.	San Antonio.
Bell, B. F.	Tyler.
Bell, J. M.	Iowa Park.
Bellamy, C. L.	Dale.
Benbrook, J. T.	Rockwall.
Bennett, T. J.	Austin.
Bennett, H. M.	Florence.
Bennett, Edward.	San Antonio.
Bennett, B. H.	Anderson.
Benton, G. W.	Woodbury.
Berg, L. M.	San Antonio.
Bergman, H.	Livingston.
Bergman, S. A.	Corrigan.
Berry, D.	San Antonio.
Bernard, J. L.	Dallas.
Bevans, F. A.	Mabank.
Beverly, H. H.	Smiley.
Bickley, N. H.	Merit.
Biggs, W. D.	Lometa.
Bigham, R. J.	Circle.
Bindley, J. H.	San Antonio.
Birdwell, J. A.	Overton.
Bishop, W. A.	Chief.
Blair, H. A.	San Antonio.
Black, W. B.	Pittsburg.
Blackburn, R. L.	Carrollton.
Black, D. W.	Rosebud.
Black, C. C.	Georgetown.
Black, H. C.	Waco.
Black, R. C.	South Sulphur.
Blair, C. M.	Columbus.
Black, W. D.	Greenhill.
Black, J. T.	Elroy.
Black, W. T.	Andrews.
Blair, J. M.	Houston.
Blair, J. C.	Kerens.
Blair, S.	Klondike.
Blallock, W. R.	Dallas.
Blake, W. K.	
Blake, J. V.	Floresville.
Blake, G. S.	Throckmorton.
Blalock, W. C.	Kosse.
Blanton, J. J.	Buda.
Blankenship, J. B.	Rast.
Blasdell, J. W.	Reedville.
Bledsoe, R. B.	Lufkin.

Name.	P. O. Address.
Blocker, E. B.	Marshall.
Bliem, M. J.	San Antonio.
Blythe, W. H.	Mt. Pleasant.
Boyd, D. T.	Ector.
Boyd, W. D.	Waxahachie.
Boyd, F. D.	Fort Worth.
Boyd, Robert.	Weatherford.
Boyd, J. L.	Monticello.
Boyd, J. H.	Aquilla.
Boyd, J. M.	Hallettsville.
Boyd, J. G.	Houston.
Boyd, J. N.	Kerrville.
Boyles, J. M.	Houston.
Bohanan, L. T.	Garland.
Boggs, H. O.	Marquez.
Bolin, G. W.	Kilgore.
Bond, G. D.	Hillsboro.
Boon, J. T.	Elm Mott.
Boon, U. C.	Eastland.
Boone, H. C.	Richmond.
Booth, W. T.	Denison.
Boorman, T. G.	Princeton.
Boren, S. L.	Del Rio.
Bosley, W. C.	Houston.
Botter, A. W.	Concord.
Bouldin, W. W.	Bay City.
Bourland, F. M.	Houston.
Bourland, J. W.	Dallas.
Bowmer, O. C.	Round Rock.
Bowers, S.	Brenham.
Bowers, H. R.	Columbus.
Bowman, A. R.	Uvalde.
Bowman, C. W.	Caddo Mills.
Bowers, John	Columbus.
Bowen, J. K. P.	Howe.
Braunnagle, J.	San Antonio.
Bramlett, A. C.	Decatur.
Bradley, C. H.	Pennington.
Brazelton, B. F.	Weatherford.
Bradley, B. R.	Hondo.
Bradfield, J. W.	Daingerfield.
Braman, D. H.	Victoria.
Bratton, T. S.	San Antonio.
Bragg, J. B.	Garland.
Brassell, T. C.	Cost.
Brewer, C. P.	Fort Worth.
Breath, W. P.	Galveston.
Brewton, I. H.	Eagle Pass.
Brewer, J. C.	Lytton Springs.
Briggs, W. B.	Easterly.
Britton, J. M.	Scranton.
Bristol, W. A.	Denison.
Bright, R. L.	Silsbee.
Broadstreet, S. C.	Mt. Pleasant.
Brown, B. F.	Crockett.
Brown, W. L.	El Paso.
Brown, C. P.	El Paso.
Brown, I. Z.	Ensign.
Brown, Wm.	Britton.
Brown, A. A.	San Antonio.
Brown, W. W.	Groesbeck.
Brown, A. F.	Royse City.
Brown, H. H.	Yoakum.
Brooks, R. C.	Waelder.
Brockman, J. O.	Ivan.
Brown, S. W.	Commerce.
Brown, W. T.	Wallis.
Brown, A. L.	Upton.
Brown, S. W.	Fay.
Broach, R. W.	Lyons.
Brownlee, J. S.	Burnet.
Brumby, W. M.	Houston.
Bruce, J. S.	Eagle Lake.
Bunkley, W. N.	Stamford.
Burnett, E. W.	Windom.
Buchanan, L. C. G.	San Angelo.
Burger, W. M.	Stephenville.
Burleson, S. J.	Fredonia.
Burgis, J. L.	Waco.
Burleson, E. M.	Richland Springs.
Burch, J. D.	Aurora.
Burdett, J. B.	Bellville.
Burnett, T. F.	Seymour.
Burnside, S. H.	Wichita Falls.
Burke, J. A.	San Antonio.
Burgess, W. M.	San Antonio.
Burrows, H. A.	New Boston.
Bundy, Z. T.	Milford.
Burke, H. S.	Corpus Christi.
Bunkley, J. F.	Seymour.
Burroughs, S. R.	Buffalo.
Bullett, S. W.	Zavala.
Burke, J. A.	Roan's Prairie.
Burt, J. D.	Farmersville.
Burton, E. L.	McKinney.
Burleson, J. H.	San Antonio.
Burke, Albert.	San Antonio.
Burg, S.	San Antonio.
Bush, I. J.	El Paso.
Buster, O. C.	Pilot Point.
Buster, A. O.	Celina.
Bush, L. H.	Huntsville.
Bussey, D. C.	Timpson.
Buehring, Theo.	Nordheim.

Name.	P. O. Address.
Bule, J.	Hillsboro.
Butler, J. O.	Tarpley.
Butler, W. H.	Farmer's Branch.
Butler, J. D.	Orange.
Bute, J. H.	Houston.
Butts, T. R.	Box Elder.
Bynum, M. W.	Brownwood.
Bynum, J. T.	Neinda.
Bryan, C. O.	Dallas.
Bryant, A. T.	McKinney.
Bryson, E. E.	Pittsburg.
Bryan, O. J.	Park.
Bryan, M. W.	Lovelace.
Cadell, M.	Greenwood.
Calvert, W. C.	Mineola.
Caffery, Russell	San Antonio.
Callan, W. W.	Donalton.
Caldwell, J. A.	McKinney.
Calhoun, T. G.	Teneha.
Callan, G. P.	Hasse.
Campbell, P. L.	Dallas.
Campbell, W. R.	Chappell Hill.
Campbell, W. M.	Weatherford.
Calhoun, B. F.	Beaumont.
Camp, James	Pecos.
Callaway, Geo. McD.	Anson.
Campbell, M. E.	Sterling City.
Campbell, N. W.	Wills Point.
Campbell, C. A. R.	San Antonio.
Cantrell, C. A.	Nesbitt.
Cansler, H. K.	Travis.
Cannon, R. G.	Moscow.
Cannon, I. F.	Gober.
Cantrell, C. E.	Greenville.
Cannon, M. B.	Corrigan.
Cannon, J. E.	Celeste.
Cappleman, J. J.	Honey Grove.
Carlton, B. H.	Velasco.
Capps, E. D.	Fort Worth.
Carson, J. W.	Comanche.
Carroll, T. W.	Clarendon.
Carter, J. T.	Walhalla.
Carpenter, J. C.	Kyle.
Carlton, E. E.	Ringgold.
Carloss, T. C.	Uz.
Carroll, E. S.	Center.
Carhart, J. W.	Austin.
Carmen, E. M.	Henry.
Carruth, W. E.	Corpus Christi.
Carnes, W. A.	San Angelo.
Carnes, A. W.	Hutchins.
Cary, E. H.	Dallas.

Name.	P. O. Address.
Carter, G. S.	Beckville.
Carter, G. W.	Forreston.
Carter, W. N.	Leland.
Carpenter, E. R.	El Paso.
Carter, W. S.	Galveston.
Carlton, J. C.	Bonham.
Carmichael, A.	Granbury.
Carwile, H. R.	Marshall.
Carmichael, J. B.	Nacona.
Carter, W. H.	Poolville.
Casey, Z. W.	Albany.
Cash, C. M.	Tuscola.
Cate, W. R.	Cumby.
Cass, J. L.	Cameron.
Cates, S. R.	Abilene.
Cass, N.	Cameron.
Chambers, J. P.	Omaha.
Chapman, H. J.	San Antonio.
Chandler, J. N.	Weatherford.
Chapman, J. H.	Lufkin.
Chase, E. D.	Galveston.
Chapman, M. L.	Temple.
Chapman, J. B.	Paris.
Chapman, P.	Smithville.
Chambers, E. S.	English.
Chapman, J. W.	Woodville.
Chapman, W. P.	Woodville.
Chase, I. C.	Fort Worth.
Chambers, B. F.	Ash.
Cheatham, R. W.	DeKalb.
Cheatham, J. C.	Rosser.
Cheatham, T. C.	Burnet.
Cherry, T. F.	Timber.
Chilton, P. H.	Zourette.
Chilton, W. E.	Fort Worth.
Childress, D. M.	Lufkin.
Chiles, Frank	Honey Grove.
Childers, R. A.	Floydada.
Childress, H. J.	Gilmer.
Church, E. A.	Weatherford.
Clark, I. E.	Schulenburg.
Clark, W. A.	Cumby.
Clark, P. A.	Rosenthal.
Clark, C. T.	Clarksville.
Clarke, E. T.	Keltys.
Clavin, E. C.	San Antonio.
Clark, H.	Thalia.
Clay, A. B.	Mullen.
Clarke, J. F.	Paris.
Clark, S. D.	Nacona.
Clark, T. H.	Salona.
Clark, D. W.	Montague.

Name.	P. O. Address.
Clark, F.	Caddo.
Clark, W. M.	Floresville.
Cleary, P. J. A.	San Antonio.
Cleary, P. J.	San Antonio.
Clemons, I. T.	Monaville.
Cearnal, A. E.	Indian Creek.
Cline, W. B.	Arnum.
Clifford, G. G.	San Antonio.
Cloud, W. O.	Samuel.
Clopton, A. G.	Jefferson.
Cobb, G. M.	Ely.
Cobb, D. P.	Blanket.
Cobb, C. A.	Beaumont.
Coble, J. M.	Dallas.
Cochran, R. H.	Silver Valley.
Cocke, Rogers	Jefferson.
Cochran, W. B.	Stafford.
Cochrane, A. S.	Mineola.
Coffey, J. C.	Lucus.
Collins, W. B.	Lovelady.
Collier, E. S.	Wills Point.
Collins, H. V.	Jacksonville.
Collins, F. A.	Center Point.
Collom, S. A.	Kennard.
Collins, S. J.	Lovelady.
Colley, J. M.	Palestine.
Cole, C. A.	Beaumont.
Cole, J. W.	Lakota.
Cole, W. M.	Longview.
Coleman, R.	Hanover.
Coleman, P. C.	Colorado.
Collier, J. F.	Conroe.
Coleman, W. J.	Mineola.
Collins, W. D.	Hatton.
Cole, W. A.	Hollis.
Colquitt, L. A.	Rio Vista.
Comer, C. C.	Carthage.
Combe, C. B.	Brownsville.
Combe, F. J.	Brownsville.
Combe, J. K.	Brownsville.
Combs, R. L.	Cooper.
Combs, H. B.	Bastrop.
Conger, J. D.	Quitman.
Connally, H. F.	Bruceville.
Conally, D. H.	San Angelo.
Conerly, T. W.	San Angelo.
Connerly, O. M.	Atlanta.
Connor, W. E.	Cumby.
Connor, A. C.	Lexington.
Conger, R. E.	China Springs.
Conson, A. H.	Gainesville.
Cooper, J. D.	Brookland.
Cooper, J. E.	Golden.
Cooke, J. E.	Battle.
Cook, C. G.	Weimar.
Cooper, C. T.	San Angelo.
Cook, E. T.	Mineral Wells.
Cook, D. M.	Granger.
Cook, E. F.	Foreston.
Cook, C. C.	Bardwell.
Coopwood, T. B.	Lockhart.
Cooke, H. P.	Galveston.
Cook, C. M.	Point.
Cook, E. J.	Mt. Pleasant.
Cook, R. C.	Mt. Pleasant.
Cook, W. G.	Fort Worth.
Coons, L.	Wichita Falls.
Copeland, H. V.	Grand Prairie.
Copenhaven, J. T.	Parvin.
Coppedge, J. J.	Lone Oak.
Corley, L.	Madisonville.
Corley, Sam	Clarksville.
Cornick, Boyd	San Angelo.
Corry, J. F.	Rockwall.
Corry, A. C.	Copeville.
Coutant, C. W.	Oak Forest.
Couch, J. A.	Edhube.
Couch, J. F.	Simpsonville.
Coulter, H. T.	Rockdale.
Cousins, R. D.	Bronson.
Covert, J. D.	Fort Worth.
Cowan, W. B.	Dialville.
Cox, L. M.	Martin's Mill.
Cox, J. W.	Groesbeck.
Cox, A. B.	Ladonia.
Cox, E. O.	Galveston.
Cox, R. L.	Houston.
Crawford, J. M.	Alto.
Crawford, R. W.	Muenster.
Craddock, L. L.	Belcherville.
Crain, N. W.	Newcomb.
Crane, J. M.	Pirtle.
Cranford, W. V.	Buffalo Gap.
Cragwall, A. O.	Stephenville.
Cravens, M. H.	Arlington.
Crabtree, S. C.	Mt. Pleasant.
Credelle, H. P.	Commerce.
Cravens, J. A.	Peede.
Crew, C. J.	Moody.
Cross, G. W.	Brownwood.
Cross, Edward	San Antonio.
Cross, W. D.	Paris.
Crosthwaite, W. L.	Holland.
Croft, C. W.	Montague.

Name.	P. O. Address.
Crouch, G. W.	Bronson.
Crouse, H. W.	El Paso.
Crowder, T. W.	Sherman.
Crowell, C. W.	Marshall.
Crow, W. E.	Dallas.
Crook, W. A.	Lindale.
Crume, J. J.	Gorman.
Crook, W. J.	Cooper.
Cruse, J. B.	Lillard.
Cummings, D. L.	Sparta.
Cunningham, S. P.	Lufkin.
Cunningham, W. W.	Beaumont.
Cunningham, O. W.	Valley View.
Currie, R. F.	Conroe.
Curtis, W. K.	Midland.
Curtis, A. M.	Waco.
Curtis, C. C.	Rogers.
Culley, S. T.	Bremond.
Crudgington, W. B.	Gainesville.
Cruse, J. B.	Woodville.
Crump, J. G.	St. Jo.
Currie, D. B.	Kerens.
Cummings, H. W.	Hearne.
Dabney, Ben J.	Bonham.
Daly, T. J.	Bayer.
Daniel, F. E.	Austin.
Daniels, J. E.	Annona.
Daniels, J. A.	Carthage.
Daniels, J. G.	Gilmer.
Danforth, C. G.	Granger.
Darnall, C. F.	Llano.
Darroch, D. C.	Fredericksburg.
Darwin, T. M.	Lake Creek.
Darnell, D. C.	Grand Saline.
Daugherty, James	Fentress.
Davis, W. A.	Salado.
Davis, J. C.	Bullard.
Davis, W. H.	San Antonio.
Davis, C. E.	Douglassville.
Davis, R. L.	Princeton.
Davis, E. P.	Houston.
Davis, C. W.	Godley.
Davis, J. D.	Roby.
Davis, W. H.	Arlington.
Davis, C. C.	New Boston.
Davis, A. E.	Ennis.
Davis, Oscar	Cistern.
Davis, W. E.	Guy's Store.
Davis, J. L.	San Antonio.
Davidson, A. M.	Roby.
Davidson, J. S.	San Felipe.
Davidson, G. L.	Wharton.
Davidson, W. L.	Glenflora.
Davie, W. J.	Wrightsboro.
Davidson, J. K.	Eagle Lake.
Day, J. W.	Stephenville.
Day, W. L.	Illinois Bend.
Denman, R. L.	Lufkin.
Denman, P. R.	Lufkin.
Denman, A. M.	Lufkin.
Denson, T. J.	Ben Arnold.
Deal, E. C.	Sherwood.
Dean, J. J.	Waco.
Decherd, H. B.	Galveston.
Decker, C. M.	San Antonio.
Delaney, G. E.	Galveston.
Delalondre, M. L.	Galveston.
De Lama, A. G.	San Antonio.
DePew, E. V.	Del Rio.
DeSteuger, J. R.	San Marcos.
DeJernett, W. B.	Commerce.
DeBerry, L. S.	Clarksville.
DeBerry, M. W.	Bagota.
DeTad, W. T.	Victoria.
Devine, I. N.	Groveton.
Devlin, Ella	Galveston.
Dial, J. J.	Sulphur Springs.
Dickey, S. L.	Dodd City.
Dillard, R. E.	Weches.
Dildy, J. E.	Lampasas.
Dillard, B. A.	Chillicothe.
Dinwiddie, R. L.	San Antonio.
Dinwiddie, B. A.	Clarksville.
Dixon, C. D.	Uvalde.
Dobbs, J. C.	Ganado.
Dodson, J. E.	Vernon.
Dodson, J. E., Jr.	Vernon.
Dodge, J. G.	Hodges.
Dollar, J. M.	Gause.
Domingues, P. J.	Kerrville.
Dongis, H. E.	Castell.
Donnell, C. E.	Dimmit.
Dorsett, Theo.	Bryan's Mill.
Dorr, E. G.	Burnet.
Dorbandt, J. D.	Lampasas.
Dorbandt, Thomas	Lampasas.
Dossey, W. J.	Rhome.
Douglass, J. G.	Itasca.
Downs, H. E.	Lewisville.
Drisdale, W. E.	Yoakum.
Driver, J. D.	Oakwoods.
Duckett, J. D.	Houston.
Ducie, W. I.	Galveston.
Dudgeon, H. R.	Galveston.

Name.	P. O. Address.
Duke, G. W.	Ewell.
Duke, W. H.	Gober.
Dunn, R. M.	Palestine.
Duke, A. W.	Center.
Dunlap, Elbert	Dallas.
Duke, T. B.	Gober.
Duncan, M. J.	Dallas.
Dunlap, W. F.	Cason.
Dudley, R. L.	Marysville.
Dudley, J. B.	Marysville.
Duggan, Malone	Eagle Pass.
Duncan, J. F.	Houston.
Duncan, T. G.	Victoria.
Dunbar, W. P.	Campbell.
Dunn, R. B.	Tolar.
Dunn, W. H.	Okra.
Dupuy, A. D.	San Antonio.
DuPuy, A. G.	Tennessee Colony.
DuBose, J. P.	Lay.
Durand, J. E.	Ravenna.
Durham, G. W.	Farmer.
Durham, J. S.	Wichita Falls.
Durrum, J. C.	Clarksville.
Dyer, J. O.	Galveston.
Dyer, J. F.	Chicota.
Dye, L. L.	Plain View.
Eastham, L. C.	Ferris.
Eargle, W. H.	Alexander.
Earthman, H. W.	Conroe.
Echols, W. T.	Gober.
Eckols, J. W.	Gainesville.
Eastland, J. H.	Abilene.
Edens, H. L.	Bertram.
Edgar, C. L.	Childress.
Edwards, T. R.	Cleburne.
Edwards, E. P.	Paris.
Edwards, K. Q.	Fort Worth.
Efurd, W. P.	Pine.
Ehlinger, Otto	LaGrange.
Eidman, F. G.	Houston.
Eidson, M. L.	Beeville.
Ellis, B. V.	Paris.
Ellis, G. S.	Sherman.
Ellis, J. W.	Oakalla.
Ellis, I. D.	Troy.
Ellison, W. A.	Lockhart.
Elliot, B. S.	Augusta.
Ellington, F. H.	Pittsburg.
Elliott, J. F.	Bowie.
Elmore, A. M.	Dallas.
Elmendorf, E. H.	San Antonio.
Embry, J. A.	Decatur.
Embree, J. W.	Belton.
Emory, G. W.	Bryan.
English, E. W.	Slayden.
Englehardt, H. A.	Houston.
Epperson, A. S.	Cameron.
Erwin, J. C.	McKinney.
Erwin, J. H.	Tolosa.
Estes, C. P.	Hereford.
Etter, W. F.	Rogers.
Evans, J. R.	Devine.
Evans, E. A.	Ezzell.
Evans, W. T.	Jewett.
Evans, W. D.	Dallas.
Evans, E. O.	San Antonio.
Evans, J. H.	Palestine.
Evans, A. H.	Eagle Pass.
Everett, W. B.	Livingston.
Everett, C. F.	Clarkson.
Ewing, J. A.	Dallas.
Ezell, A. T.	Kosse.
Falvey, T. S.	Clinesburg.
Fambo, T. W.	Center.
Faulk, Lem.	Riley Springs.
Farmer, T. J.	Dublin.
Farrington, J. B.	Vernon.
Fegan, Geo.	San Antonio.
Fehrenkamp, B. J.	Freisburg.
Feilds, W. M.	Oak.
Feemster, M. B.	Omega.
Felts, R. L.	San Antonio.
Fender, J. H.	Lamasco.
Ferrell, J. Z.	Tyler.
Fereell, N. E.	Myrtle Springs.
Ferguson, A. W.	Montalba.
Ferguson, E. S.	Cameron.
Ferguson, R. K.	Yarrelton.
Ferguson, B.	San Angelo.
Ferguson, Aug. D.	Estacado.
Ferguson, J. M.	Kingsville.
Fields, J. D.	Manor.
Field, J. T.	Fort Worth.
Finney, W. D.	Wrightsboro.
Fisher, E. M.	Gainesville.
Fisher, F. K.	Galveston.
Fisher, W. C.	Galveston.
Fisher, T. B.	Dallas.
FitzSimon, J. T.	Castroville.
Fitzpatrick, W. W.	Paris.
Fliniken, T. R.	Holland.
Fleming, T. M.	Ripley.
Fleming, W. P.	Georgetown.
Florrence, J. B.	Leesburg.

Name.	P. O. Address.
Floyd, J. R.	Itasca.
Floyd, J. F.	Lone Oak.
Florence, J. H.	Dallas.
Florer, T. W.	Waxahachie.
Fly, A. W.	Galveston.
Fly, W. R.	Amarillo.
Foote, S. A.	Matagorda.
Ford, J. F.	Decatur.
Fontaine, H. L.	Bryan.
Forbes, M. A.	Kennedy.
Forehand, J. F.	Ensign.
Ford, E. H.	Heath.
Ford, F. C.	Nacogdoches.
Ford, F. C.	Houston.
Forrester, W. H.	Needmore.
Fordtran, F. L.	Kerrville.
Foscue, C. J.	Neches.
Foscue, G. B.	Waco.
Foster, J. H.	Austin.
Foster, J. B.	Leaky.
Foster, E. H.	Bonham.
Foster, E. C.	Whitt.
Foster, J. C.	Clarksville.
Foster, C. C.	Corn Hill.
Foster, G. W.	Georgetown.
Fountaine, W. J.	Jones Prairie.
Fouts, J. J.	Gonzales.
Fowler, E. M.	Forney.
Fowler, W. W.	Ballinger.
Fowler, D. D.	Paint Rock.
Fowler, W. E.	Huntsville.
Fowler, B. A.	Brownwood.
Fowler, W. Y.	Valley Springs.
Fox, C. R.	Myrtle Springs.
Francis, S. J.	Luling.
Frazier, J. M.	Belton.
Franklin, R. E.	Content.
Frazier, J. R.	Marine.
Freedman, S. M.	Dallas.
Freeman, Wm.	Luella.
French, J. H.	Greenville.
Frechet, E. A.	Hochheim.
Frie, H. C.	St. Jo.
Frizzell, T. D.	Powell.
Fry, J. M.	Wills Point.
Fry, Harry	Wills Point.
Fuller, F. A.	Jacksonville.
Fullerton, C. F.	Summerville.
Fullingin, M. D.	Argyle.
Fuller, H. H.	Peoria.
Fuller, J. E.	Sumner.
Fuller, A. L.	Hallettsville.

Name.	P. O. Address.
Fryar, T. V.	Corsicana.
Gage, S. C.	Ennis.
Galloway, A. H.	Laneville.
Galloher, J. W.	Graham.
Galloway, C. M.	Marine.
Gallaher, R. L.	San Antonio.
Gallagher, F. W.	El Paso.
Gammon, Wm.	Galveston.
Grant, C. B.	Graham.
Garrett, A. S.	Springtown.
Gardner, A. B.	Denison.
Garwood, A.	New Braunfels.
Gardiner, J. E.	San Antonio.
Garrett, F. D.	Gainesville.
Garrett, W. M.	Forney.
Garner, A. F.	Cleburne.
Garnett, J. W.	Greenville.
Gaston, J. L.	Guthrie, O. T.
George, Robert	Chester.
Geron, T. C.	Petty.
Ghent, H. C.	Belton.
Gibbs, J. P.	Houston.
Gibson, J. A.	Beaumont.
Gibson, B. F.	Midway.
Gibson, J. W.	Austin.
Gibson, J. W.	Lindale.
Gibson, J. E.	McKinney.
Gibner, G. P.	Swan.
Gidney, C. C.	Granger.
Gilcreest, J. E.	Gainesville.
Gilbert, E. B.	Gorman.
Gilbert, J. C.	Chisholm.
Gilbert, Joe	Austin.
Gilbert, G. H.	Austin.
Gilbert, F. M.	Izora.
Gilbert, E. E.	Haskell.
Gilbert, A. J.	Hillsboro.
Gilbert, J. M.	Lewisville.
Gilbert, D. W.	Sowers.
Gillespie, W. E.	Grand Prairie.
Gillett, W. R.	Cuero.
Gilmore, M. E.	Marine.
Girard, J. L.	San Antonio.
Glass, J. W.	Cass.
Gober, J. M.	Beaumont.
Gober, J. D.	Beaumont.
Goddard, C. W.	Holland.
Goeth, R. A.	San Antonio.
Gohlman, W. M.	Houston.
Goldbum, J.	San Antonio.
Goldsmith, J. B.	Quitman.
Goldstein, L.	Beaumont.

Name.	P. O. Address.
Goldsmith, G. M.	Iago.
Gongora, F. G.	Laredo.
Goodwin, J. N.	Kilgore.
Goolsby, Z. T.	Enloe.
Gordon, W. F.	Springtown.
Gordon, R. A.	Waco.
Gordon, E. C.	Lott.
Gordon, J. B.	Paluxy.
Gore, W. H.	Eliasville.
Gose, J. C.	Krum.
Gose, J. M.	Alvord.
Gotcher, C. W.	Garza.
Gowen, J. D.	Queen City.
Grace, M. B.	Seguin.
Gracey, J. A.	Waxahachie.
Graham, L. H.	Boyce.
Graham, R. L.	Schertz.
Grammer, R. B.	Fort Worth.
Granberry, H. B.	Austin.
Grant, J. H.	Winters.
Graves, H. N.	Georgetown.
Graves, R. S.	Austin.
Graves, Amos, Sr.	San Antonio.
Graves, Amos, Jr.	San Antonio.
Graves, M. L.	San Antonio.
Gray, J. D.	Moulton.
Gray, E. H.	Rockdale.
Gray, Wm.	Clarendon.
Gray, C. A.	Bonham.
Gray, J. B.	El Paso.
Gray, A. N.	Floyd.
Gray, E. N.	Houston.
Gray, A. J.	Comanche.
Greer, W. W.	Cameron.
Greenwood, W. W.	Plantersville.
Greenwood, T. M.	Bluffdale.
Greenwood, J. W.	Sidney.
Greenwood, J.	San Antonio.
Green, J. K. P.	Rancho.
Greenwall, S. A.	Cleburne.
Gregory, C. L.	Gilmer.
Gregory, G. W.	Corpus Christi.
Gregg, F. C.	Manor.
Griffin, M. D.	Nolansville.
Griffin, M. T.	Haskell.
Grigsby, C. M.	Kaufman.
Grissom, T. S.	Mt. Pleasant.
Grizzard, L. A.	Abilene.
Groce, P. L.	Newsome.
Guenther, J. G.	Moulton.
Guinn, H. T.	Roger's Prairie.
Guinn, E. E.	Jacksonville.
Gunby, I. P.	Sherman.
Gunn, M. L.	Ector.
Gustine, N. W.	Dalys.
Hackler, G. M.	Ennis.
Haden, J. B.	Galveston.
Haden, H. C.	Galveston.
Hairston, T. C.	Independence.
Haigler, S. H.	Austin.
Hale, R. C.	Weldon.
Hale, B. F.	Wagner.
Hale, C. S.	Brackenridge.
Hale, Wm., Jr.	Dallas.
Hale, Wm., Sr.	Dallas.
Hale, F. M.	Crews.
Haley, J. F.	Oenaville.
Halbert, O. I.	Waco.
Hall, C. E.	Lindale.
Hall, F. J.	Dallas.
Hall, R. C.	Marshall.
Hall, R. L.	Elmo.
Hall, E. P.	Fort Worth.
Hall, G. P.	Houston.
Halley, W. B.	Ballinger.
Halley, J. T.	Galveston.
Hamilton, H. J.	Laredo.
Hamilton, E. H.	Longview.
Hambright, J. G.	Roby.
Hamilton, E. J.	Houston.
Hamilton, G.	Houston.
Hamilton, J. J.	Eureka.
Hamilton, E. V.	Austin.
Hammock, R. L.	Charco.
Hammond, J. L.	Noble.
Hanson, C. B.	El Paso.
Hander, F. W.	Beaumont.
Hancock, H. R.	Jasper.
Haney, J. N.	Rocky Branch.
Haney, N. B.	Millsap.
Hannabas, Jno. H.	Gail.
Hanks, M. L.	Corbett.
Happel, J. H.	Cleburne.
Harbin, R. P.	Richardson.
Hardeman, W. E.	Clarksville.
Hardway, P. M.	Josephine.
Hare, T. D.	Greenville.
Hargus, J. W.	Farmer.
Hargrave, C. R.	Marshall.
Hargrove, W. W.	Cooper.
Harlan, W. J.	Bartlett.
Harper, H. W.	Austin.
Harper, W. A.	Austin.
Harper, J. R.	Rosston.

Name.	P. O. Address.
Harrison, J. T.	San Antonio.
Harrison, C. M.	Cooper.
Harrison, R. H.	Bryan.
Harrison, R. H.	Columbus.
Harrison, R. H., Jr.	Columbus.
Harrison, R. Henry	Alleyton.
Harrison, B.	Bedias.
Harrison, J. W.	Kempner.
Harrington, J. T.	Waco.
Harris, R. L.	Rio Vista.
Harris, L. L.	Cuba.
Harris, C. H.	Moran.
Harris, B. A.	Boyd.
Harris, T. M.	Mustang.
Harris, N. B.	Red Rock.
Harris, R. A.	Pleasant Grove.
Harris, M. W.	Bivins.
Harris, W. T.	Mathis.
Harris, J. F.	Celeste.
Harris, W. G.	Plano.
Harrell, T. M.	Hutto.
Harrell, T. H.	Round Rock.
Harval, Whitfield	Dallas.
Hart, J. M.	Marine.
Hart, M. M.	Spanish Fort.
Hart, S. W.	Mineola.
Hart, T. C.	Santo.
Harwood, M. P.	Hubbard City.
Haskell, P. F.	Keene.
Hathcock, A. L.	Palestine.
Hause, E.	Ferris.
Haven, V. R.	Batson.
Hawkins, C. C.	Mooreville.
Hawley, E. A.	Greenville.
Haygood, S. B.	Marble Falls.
Haynie, W. H.	Anderson.
Haynes, T. B.	Beaumont.
Haynes, C. L.	Hiram.
Hayes, C. F.	Climax.
Hayes, Wm. J.	Weches.
Haynes, F. E.	Abilene.
Haynie, Wm.	Buffalo.
Hazel, Jeff.	Fruit Vale.
Hazelwood, W. R.	Leander.
Heaney, A. G.	Corpus Christi.
Heartsill, C. E.	Marshall.
Heartsill, O. M.	Marshall.
Hedrick, J. A.	Dalhart.
Helms, C. P.	New Boston.
Henderson, J. C.	Waelder.
Hennen, J. C.	Lone Oak.
Henry, T. W.	Dallas.
Henry, S. M.	Lamasco.
Henderson, C. F.	Lafayette.
Hendricks, J. P.	Huntsville.
Herndon, H. T.	St. Jo.
Herff, Adolph	San Antonio.
Herff, John	San Antonio.
Herff, F., Sr.	San Antonio.
Herrington, J. C.	Orange.
Herrington, J. L.	Mullen.
Herring, J. C.	Jones Prairie.
Herndon, J. H.	Miles.
Herald, G. W.	Bowie.
Hertzberg, E. F.	San Antono.
Herzog, Sofie	Brazoria.
Hester, B. O.	Waco.
Hicks, D. P.	Kaufman.
Hicks, F. M.	San Antonio.
Hicks, A. G.	Sterrett.
Hicks, J. H.	Josephine.
Hicks, J. T.	Josephine.
Hicks, J. W.	Hereford.
Higgins, C. C.	Houston.
Higgins, D. M.	Gainesville.
Higginbottham, W. L.	Howe.
Hildebrand, W. J.	Gonzales.
Hill, M. I.	El Paso.
Hill, J. T.	Willow Hole.
Hill, J. A.	Groveton.
Hill, B. D. W.	Dawson.
Hill, H. B.	Austin.
Hill, L. D.	Austin.
Hilliard, H. I.	Marshall.
Hilgartner, H. L.	Austin.
Hines, B. F.	Noonday.
Hines, J. F.	San Antonio.
Hines, B. M.	Uvalde.
Hines, L. S.	Oakalla.
Hix, R. W.	Vernon.
Hirschfeld, Louis	Marion.
Hoard, W. R.	Sherman.
Hodges, W. E.	Massey.
Hodges, O. S.	Beaumont.
Hodge, C. W.	Quanah.
Hodge, H.	Vanita.
Hodges, J. E.	Houston.
Hofstetter, G. A.	Corsicana.
Holderness, G. W.	Commerce.
Holt, J. B.	Lockhart.
Holt, C. I.	Tyler.
Holton, R. W.	Rosser.

Name.	P. O. Address.
Holley, J. S.	Tyler.
Holland, J. H.	Omen.
Holleman, W. D.	Laneville.
Hollis, L. W.	Abilene.
Holman, J. C.	Franklin.
Holloway, J. A.	Round Rock.
Homan, R. B.	Colorado.
Honeycutt, J. B.	Hookerville.
Honeycutt, J. B.	Denton.
Hons, J. M.	San Marcos.
Hooe, E. B.	Rosanky.
Hooker, J. D.	Alice.
Hooper, P. L.	Fort Worth.
Hooper, W. N.	Conroe.
Hooper, J. M.	San Antonio.
Hooper, J. M.	Ennis.
Hooper, R. B.	Matagorda.
Hook, J. M.	Paris.
Hooper, J. L.	Denton.
Hoover, S. B.	Pontotoc.
Hopkins, R. R.	Victoria.
Horn, J. W.	Josserand.
Horn, J. M.	Paige.
Horn, J. H.	Shelbyville.
Horne, W. S.	Marlin.
Horton, R. W.	Houston.
Houston, B. F.	McKinney.
Houston, B. F.	Corsicana.
Houston, D. H.	Floresville.
Howard, E. M.	Uvalde.
Howard, W. R.	Fort Worth.
Howard, G. R.	Palestine.
Howard, W. C.	Newton.
Howard, F.	Boerne.
Howe, T. G.	Douglasville.
Howell, R. L.	Killeen.
Howell, Asa	Burnet.
Howze, J. E.	Austin.
Hubbard, B. J.	Kaufman.
Huckaby, F. G.	Jacksboro.
Huddleston, J. M.	Cleburne.
Hudgins, D. H.	Forney.
Hudgins, B. E.	Crandall.
Hudson, J. C.	Scurry.
Hudson, Taylor	Belton.
Hudson, S. E.	Austin.
Huffaker, D. H.	El Paso.
Huggins, J. N. H.	Georgetown.
Hughes, C. T.	Gainesville.
Hughes, E. T.	San Antonio.
Hull, C. F.	Carthage.
Hume, Lea	Eagle Pass.
Humphreys, S. T.	Nacona.
Hunt, R. S.	Heidenheimer.
Hunter, J. B.	Skidmore.
Hunter, J. E.	Melissa.
Hunter, J. W.	Theo.
Hunter, R. H.	Bullard.
Hunter, J. R.	Hornsby.
Hurt, J. H.	Big Springs.
Hutchins, J. F.	Oakland.
Hutchinson, G. W.	Ebony.
Inge, J. M.	Denton.
Ingram, J. J.	Decatur.
Irby, Alfred	Weatherford.
Irvin, O. C.	El Paso.
Irvin, E. H.	El Paso.
Irvine, W. P.	Mabank.
Irwin, A. W.	Fairview.
Jackson, O. C.	Voca.
Jackson, C. M.	Frankfort.
Jackson, T. T.	San Antonio.
Jackson, C. N.	Frankfort.
James, J. M.	Glen Cove.
James, A. J.	Houston.
Jameson, G. M.	Buda.
Jamison, W. G.	Palestine.
Jarrett, J. C.	Valley Mills.
Jarvis, A. S.	Troupe.
Jaukofsky, Louis	Pittsburg.
Jeffries, J. W.	Louise.
Johnson, M.	Fentress.
Johnson, C. L.	Dallas.
Johnson, F. B.	Anderson.
Johnson, G. A.	Abner.
Johnson, W. L.	Giddings.
Johnson, W. R. K.	Green Hill.
Johnson, C. F.	Seymour.
Johnson, G. W.	San Antonio.
Johnson, C. R.	Gainesville.
Johnson, J. L.	Eastland.
Johnson, R. A.	Flatonia.
Johnson, J. C.	Richmond.
Johnson, Clay	Corsicana.
Johnson, E. A.	Amarillo.
Johnson, W. R.	Winona.
Johnson, B. F.	Stockdale.
John, Frank	Field's Store.
Johns, H. M.	Ennis.
Jones, B. F.	Cisco.
Jones, J. A.	Palmer.
Jones, F. A.	Selfs.
Jones, J. C.	Gonzales.
Jones, J. A.	Running Water.

Name.	P. O. Address.
Jones, C. C.	Comfort.
Jones, W. P.	Teneha.
Jones, J. T.	Sherman.
Jones, W. D.	Marshall.
Jones, L. L.	Forney.
Jones, Robert	Rosalie.
Jones, G. M.	Springtown.
Jones, W. T.	Georgetown.
Jones, O. L.	Fort Worth.
Jordan, Wm.	Aspermont.
Jordan, J. D.	Madisonville.
Joyce, J. H.	Buffalo.
Joyes, C.	Fort Worth.
Justice, A. L.	El Paso.
Jenkins, D. J.	Daingerfield.
Jenkins, F. H.	Howard.
Jenkins, W. N.	Rienzi.
Jennings, W. E.	Burnet.
Jester, H. B.	Corsicana.
Jeter, V. S.	Atlanta.
Jinkins, E. M.	Abbott.
Jenkins, B. L.	Weatherford.
Kaiser, F. W.	Flatonia.
Karbach, F. R.	Maxwell.
Keiller, Wm.	Galveston.
Keidell, A.	Fredericksburg.
Kelly, J. A.	Fort Worth.
Keller, C. E.	San Antonio.
Kelton, L. E.	Corsicana.
Kennedy, T. L.	Galveston.
Kennedy, C. T.	Greenville.
Kennedy, A. B.	Bonham.
Kennedy, J. W.	Lewisville.
Kenney, J. W.	San Antonio.
Keplinger, C.	Waxahachie.
Keys, T. L.	Rockwall.
Keys, B. E.	Fate.
Kidd, W. E.	Leonidas.
King, W. A.	Falls City.
King, Otis	Styx.
King, H. L.	Ray.
King, C. E. R.	San Antonio.
King, W. A.	La Vernia.
King, R. W.	Creedmoor.
King, G. T.	Elgin.
King, A. R.	Telico.
King, F. B.	Houston.
King, S. A.	Karnes City.
King, J. C. J.	Waco.
Kingsley, Josephine	San Antonio.
Kingsley, B. F.	San Antonio.
Kinsell, B.	Dallas.
Kinney, T.	San Marcos.
Kinnemuir, W. E.	Brashear.
Kimbrough, W. G.	Krum.
Kimbrough, W. C.	Krum.
Kimble, E. W.	Gorman.
Kirby, H. S.	Silsbee.
Kirk, L. H.	Austin.
Kirkham, F. W.	Brownsville.
Kirkpatrick, O. H.	McKinney.
Kirkpatrick, D. F.	Lewisville.
Kirkpatrick, S. B.	Waco.
Kirksey, E. F.	Gibtown.
Kittrell, T. F.	Texarkana.
Knight, Lee	Temple.
Knight, J. T.	Anthony.
Knight, J. R.	Porter Springs.
Knox, T. R.	Hallettsville.
Knox, C. H.	Greenwood.
Knox, R. W.	Houston.
Knolle, R. L.	Lockhart.
Knolle, A. P.	Ehlinger.
Knolle, O. J.	Industry.
Knolle, B. E.	Industry.
Knopf, L. O.	Sterling City.
Knoblauch, C. F.	Ysleta.
Kobro, A. M.	Hallettsville.
Kotzebue, A. M.	Moulton.
Kolaczkowski, C. G.	Dallas.
Krueger, Fred	Galveston.
Krueger, E.	Kyle.
Kroulick, F. J.	Kenney.
Kuhn, Aug.	Walburg.
Kusch, L.	Pottsboro.
Kyle, J. A.	Houston.
LaBauve, R. E. L.	Edna.
Lackey, J. M.	Cuero.
Lackey, W. C.	Fort Worth.
Lacy, W. S.	Troupe.
Lacy, R. Y.	Pittsburg.
Lain, Geo. D.	Sanger.
Lain, H. B.	Cooper.
Lane, C. S.	Jacksonville.
Lane, R. H.	Eagle Pass.
Landis, J. A.	Gainesville.
Lancaster, J. R.	Granbury.
Lancaster, J. C.	Vilas.
Lancaster, W. H.	Ganado.
Lankford, J. S.	San Antonio.
Lankford, S. C.	Sherman.
Lankford, F. M.	Golden.
Landrum, S. H.	Whitewright.
Langhorne, W. H.	Chappell Hill.

Name.	P. O. Address.
Lanier, L. P.	Weatherford.
Land, W. M.	Waterloo.
Lamar, L. L.	Georgetown.
Largent, T. W.	Lufkin.
Largen, T. J.	San Antonio.
Largent, J. W.	McKinney.
Larendon, G. W.	Houston.
Latham, W. W.	Porter Springs.
Law, J. D.	Belton.
Lawrence, C. W.	Longview.
Lawrence, H. M.	Longview.
Lawrence, D. H.	Galveston.
Lawson, J. T.	Files.
Lawson, F. W.	Orange.
Lawson, C. P.	Martindale.
Layton, L. F.	Brownsville.
Lay, J. E.	Hallettsville.
Lay, J. E., Jr.	Sweet Home.
Lassiter, R. H.	Lawson.
Lasater, Wm. S.	Aledo.
Leach, E.	Galveston.
Leache, H. F.	Aledo.
Leake, H. K.	Dallas.
Ledbetter, A. A.	Hallettsville.
Ledbetter, A. D.	Crandall.
LeGrand, G. F.	Hereford.
LeGrand, C. W.	Hempstead.
Lee, L. L.	Thorndale.
Lee, W. P.	Cisco.
Lee, S. C.	Red Water.
Lee, A. G.	Atlanta.
Lee, R. E.	Bantam.
Lee, G. H.	Galveston.
Leeman, S. W.	Dallas.
Leeman, H. H.	Windom.
Lemon, W. N.	Commerce.
Leonard, J. W.	Peters.
Leonards, H.	New Braunfels.
Lesnett, C. R.	Fairlee.
Leslie, A. C.	Snyder.
Letzerich, C. W.	Sublime.
Lewis, C. T.	Vineland.
Lewis, H. F.	Nugent.
Lewis, A. DeCalb.	Fort Worth.
Lewallen, W. B.	Bonham.
Lillard, Z. F.	Houston.
Lincicum, A. L.	Edna.
Lindsay, A. H.	Paris.
Lindley, C. D.	Burkett.
Link, H. R.	Palestine.
Link, E. W.	Palestine.
Lipscomb, W. D.	Grapevine.
Lipscomb, R. S.	Grapevine.
Lipscomb, C.	Denton.
Lipscomb, P.	Denton.
Lipscomb, W. C.	Crockett.
Lipscomb, C. D.	Quitman.
Lister, S. M.	Richmond.
Little, R. B.	Tunis.
Littler, W. D.	Abilene.
Littlefield, V. C.	Leesville.
Litten, Frank	Austin.
Livingston, D. S.	Llano.
Livingston, J. W.	Jonesville.
Lively, W. M.	Dallas.
Lockett, W. A.	Amarillo.
Loggins, J. C.	Ennis.
Loggins, L. L.	Willis.
Logan, W. H.	Bowie.
Lofiin, T. B.	Mallard.
Lloyd, T. P.	Shreveport.
Long, W. W.	Sulphur Springs.
Longino, H. M.	Jacksboro.
Longino, S. B.	Sulphur Springs.
Long, Newt.	Santa Anna.
Long, R. L.	Kildare.
Longmire, R. B.	Jacksonville.
Lopp, J. L.	Dan.
Lott, M. K.	Cameron.
Love, J. D.	El Paso.
Love, A. S.	Ballinger.
Love, T. A.	Ravenna.
Love, R. B.	Livingston.
Loving, R. S.	Henrietta.
Loving, J. M.	Austin.
Lovelace, J. D.	Speegleville.
Lowry, S. T.	San Antonio.
Lowery, T. A.	Chillicothe.
Lowry, W. E.	Laredo.
Lowry, D. O.	Lake Creek.
Lowry, Wm.	Guy.
Lowrie, S. A.	Talpa.
Luckett, H. P.	Bastrop.
Lumpkin, R. D.	Lanier.
Lumpkin, A. F.	Amarillo.
Luter, W. E.	San Antonio.
Luttrell, J. M.	Mineral Wells.
Lynn, Bascom.	San Angelo.
Lyons, J. R.	Rising Star.
Lyon, W. P.	Cobb.
Lynch, W. W.	Midland.
Lynch, T. P.	Iowa Park.
Mabry, E. D.	Pontotoc.
Mackey, W. B.	Longview.

Name.	P. O. Address.
Macmanus, Chas.	Brownsville.
Mackeckney, L.	Patroon.
Maddux, Ella	Dublin.
Magruder, E. G.	Sealy.
Magnenat, L. E.	Amarillo.
Magness, J. C.	Devine.
Mahan, L. L.	Hempstead.
Magruder, F. B.	San Angelo.
Mahon, L. S.	Center Point.
Mahon, G. D.	Marshall.
Mahaffy, M. G.	Coleman.
Main, J. M.	Laredo.
Mallock, J. W.	Frost.
Malsch, E. A.	Victoria.
Mann, E. H. T.	Texarkana.
Manning, W. N.	Atlas.
Maner, F. B.	Itasca.
Maness, J. A.	Smiley.
Mantooth, L.	Lufkin.
Manes, O. B.	Coleman.
Mantooth, J. T.	Altoga.
Martin, F. S.	Beaumont.
Martin, J. M.	Hillsboro.
Martin, M. L.	Denton.
Martin, R. G.	Lavernia.
Martin, T. A.	Grand Saline.
Marchman, O. M.	Grand Saline.
Martin, J. H.	Nubia.
Martin, R. E.	Bonham.
Martin, F. R.	Kyle.
Martin, J. W.	Charco.
Martin, B. J.	Leggett.
Mars, J. B.	Daingerfield.
Marberry, A. J.	San Angelo.
Marsh, B. C.	Livingston.
Mask, W. B.	McClanahan.
Mason, C. F.	San Antonio.
Mast, T. A.	Chireno.
Mathews, J. O.	Howe.
Mathews, J. P.	Santa Anna.
Mathews, W. R.	Prosper.
Mathews, Y. A.	Atlanta.
Mathews, W. J.	Austin.
Mathews, J. W.	Caldwell.
Mathews, W. J.	Mt. Pleasant.
Mattox, J. F.	Gilmer.
Maxwell, T. O.	Austin.
Maxwell, F. A.	Delvalle.
Maxwell, C. L.	Myra.
Maxfield, J. M.	Grand Saline.
Maxey, S. B.	Angleton.
Mayfield, J. E.	Nacogdoches.
Mayo, S. L.	Cedar Creek.
Mays, C. E.	San Angelo.
McBride, A. S.	Lone Oak.
McBride, M. C.	Denton.
McBride, W. E.	Colmesneil.
McBeth, C. A.	Miles.
McBurnet, C. W.	Minerva.
McComat, T. J.	Aspermont.
McClellan, J. J.	Beckville.
McCordell, W. K.	Livingston.
McCreary, L. P.	Elliott.
McCaleb, G. W.	Gonzales.
McCaleb, W. E.	Webberville.
McCaleb, J. H.	Gonzales.
McCuistion, L. P.	Paris.
McCuistion, W. G.	Davis.
McCuistion, S. A.	Pattonville.
McCuistion, W. W.	Cooper.
McComb, J. W.	Jacksboro.
McCarthy, W. D.	Grapeland.
McCaun, J. M.	Neri.
McCulloch, J. T.	Quanah.
McCelvy, J. S.	Temple.
McClure, R. Q.	Paris.
McClure, M. E.	Alto.
McCarty, J. F.	Comanche.
McCullum, S.	Farmers Branch.
McCoy, R. L.	Carbon.
McCollum, C. H.	Hico.
McClenney, R. E.	Morgan Mill.
McClendon, E. F.	Galveston.
McCormick, R.	South Bosque.
McClung, J. E.	Corsicana.
McClung, R. L.	Atlanta.
McConnell, J. A.	Poolville.
McCamley, W. A.	Wharton.
McCamish, E. W.	Mineola.
McCracken, J. H.	Mineral Wells.
McCutchan, J. M.	Temple.
McCall, R. A.	Ennis.
McCall, J. G.	Brady.
McCall, W. P.	Ennis.
McCarver, J. W.	Brownwood.
McCann, J. D.	Stacy.
McCleary, S. B.	Weimar.
McDaniels, H. A.	Bonham.
McDaniel, A. S.	San Antonio.
McDonald, N. F.	Neyland.
McDonald, J. T.	Celeste.
McDowell, J. S.	Groveton.
McDuff, D. R.	Berclair.
McDuff, J. M.	Atlanta.

Name.	P. O. Address.
[illegible]	[illegible]aneville.
[illegible]	[illegible]ullocks.
[illegible]	[illegible]attan.
[illegible]	[illegible] Boston.
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	LaGrange.
[illegible]	DeKalb.
[illegible]	Alba.
[illegible]	Laredo.
[illegible]	Mansfield.
[illegible]	Kerens.
[illegible] P.	Cameron.
[illegible] R. [illegible]	Palestine.
[illegible]	Caldwell.
[illegible]	Fort Worth.
[illegible] F. P.	Austin.
[illegible] J. W.	Austin.
[illegible] J. W.	Galveston.
[illegible] J. T.	Round Timbers.
[illegible] J. D.	Paris.
[illegible] J. B. F.	Marion.
[illegible] F. M.	Rockport.
[illegible] Jesse H.	Van.
[illegible] D.	Woodville.
[illegible] H. R.	Green.
[illegible] Chas.	Weatherford.
McNew, M. C.	Anona.
McNew, H. L.	Dallas.
McNeill, W. L.	Johnson Station.
McPherson, D. B.	Hallville.
McQuery, W. M.	Zephyr.
McReynolds, G. S.	Temple.
McReynolds, J. O.	Dallas.
McReynolds, S.	Denton.
McReynolds, A. D.	Stamford.
McRee, M. M.	Dallas.
McWhorten, C. E.	Seagoville.
McGehee, E. L.	Granbury.
McGehee, A. J.	Hillsboro.
McGehee, W. E.	Cleburne.
[illegible]ger, R.	San Antonio.
[illegible]nhall, J. N.	Plano.
[illegible]sh, E. J.	El Paso.

Name.	P. O. Address.
Merritt, J. W.	[illegible]
Merrill, T. C.	[illegible]
Merriweather, L.	[illegible]
Meyer, Jos.	[illegible]
Meyrick, C. R.	[illegible]
Mickey, J. B.	[illegible]
Milliken, S. E.	[illegible]
Milner, T. J.	Greenville.
Milan, J. H.	[illegible]
Milam, E. A.	Wichita Falls.
Miles, B. J.	[illegible]
Miller, J. W.	Hillsboro.
Miller, R. F.	Sherman.
Miller, K. N.	Houston.
Miller, L. H.	Stephenville.
Miller, R. L.	Wichita Falls.
Miller, J. S.	Mt. Pleasant.
Miller, R. E. L.	Fort Worth.
Miller, T. A.	Corsicana.
Miller, Garnett	Adamsville.
Miller, W. S.	Calisburg.
Miller, F. P.	El Paso.
Miller, A. C.	Nash.
Miller, W. C.	Belott.
Mills, J. P.	Almira.
Miles, W. S.	Pennington.
Mings, M. D.	Pritchett.
Mincey, J. N.	Mineral Wells.
Mitchell, H. H.	Muldoon.
Mitchell, R. E.	Campbell.
Mitchell, A. L.	Orange.
Mitchell, J. E.	Celina.
Moeller, G. H.	Longstreet.
Moeur, J. B.	Del Rio.
Moffett, C. T.	Devine.
Monday, W. H.	Terrell.
Montgomery, A. L.	Tyler.
Mondrick, A. L.	Bryan.
Montgomery, D. W.	Concord.
Montgomery, W. C.	Carbon.
Monroe, D.	Cameron.
Moody, W. C.	Greenville.
Moody, M. L.	Greenville.
Moody, A. B.	Rhanesboro.
Moody, G. H.	San Antonio.
Moody, T. C.	Davis.
Moody, Thos., Sr.	Paris.
Moody, R. E.	Sweetwater.
Moore, W. C.	Runge.
Moore, J. A.	Marshall.
Moore, A. B.	Neyland.
Moore, J. T.	Galveston.

Name.	P. O. Address.
Moore, H. L.	Van Alstyne.
Moore, S. D.	Van Alstyne.
Moore, T. W.	LaGrange.
Moore, L. E.	Byron.
Moore, T. E.	San Antonio.
Moore, J. H.	San Antonio.
Moore, J. F., Jr.	Tyler.
Moore, W. H.	Palestine.
Moore, F. B.	Palestine.
Moore, H. P.	Alvin.
Moore, E. O.	Enloe.
Moore, W. M.	Paris.
Moore, W. I. N.	Kingsland.
Moorehead, T. R.	Ben Franklin.
Moorehead, J. D.	De Leon.
Morgan, J. B.	New Berlin.
Morris, J. E.	Madisonville.
Morris, R. T.	Houston.
Morris, J. E., Jr.	Madisonville.
Morton, W. A.	Paradise.
Morgan, T. B.	Bronson.
Morgan, W. M.	McMahan.
Morse, Oliver	Weatherford.
Morrow, W. H.	Dunn.
Morrison, T. A.	Grosvernor.
Morris, S. M.	Galveston.
Moss, R. E.	San Antonio.
Moseley, J. A. R.	Jefferson.
Moses, W. H.	Browndel.
Motley, J. H.	Overton.
Mott, Geo.	Warren.
Mugge, O. J.	Cuero.
Mullen, J. A.	Houston.
Murphy, J. H.	Powell.
Murdock, E. P.	Oakwoods.
Musick, J. T.	Pittsburg.
Myers, Wm.	Seguin.
Myrick, J. F.	Alma.
Myers, M. M.	Fate.
Nash, C. C.	Beaumont.
Nave, T. W.	Galveston.
Nave, S. F.	Shiner.
Naylor, S. D.	Stephenville.
Neathery, A. G.	Haskell.
Neathery, E. J.	Sherman.
Neal, W. S.	Dalhart.
Neel, J. M.	Bonham.
Neely, W. H.	Terrell.
Nelson, W. W.	Marshall.
Nelson, A. D.	Richland Springs.
Neville, J. E.	Petty.
Newhaus, F. A.	Schulenburg.
Newal, D. J.	Eliasville.
Newton, W. T.	Fort Worth.
Nibling, G. W.	Moffat.
Nicks, J. M.	Bryan.
Nichols, J. R.	Terrell.
Nilson, A. A.	Chireno.
Noble, R. W.	Temple.
Nooe, J. F.	Harper.
Norris, F. O.	Eagle Lake.
Norris, J. B.	Dallas.
Norris, G. B.	Celeste.
Northcutt, W. D.	Longview.
Northrup, S. G.	Giddings.
Norsworthy, O. L.	Houston.
Noster, A. H.	New Braunfels.
Nowlin, B.	Jonah.
Nowlin, A.	Georgetown.
Nunnelly, J. L.	Brazos.
Obanion, M. L.	Short.
O'Banion, W. H.	Tilman.
Obar, J. T.	Ledbetter.
O'Brien, J. G.	Dublin.
O'Conner, Albert	Kennard.
O'Mally, A.	San Antonio.
O'Farrell, J. M.	Richmond.
Ogden, T. R.	Nona.
Olive, W. A.	Waco.
Olive, W. O.	Houston.
Oliver, J. P.	Caldwell.
Oliver, A. C.	Douglasville.
Oldham, J. P.	San Antonio.
Orr, James	Terrell.
Ornelas, P.	San Antonio.
Osborn, J. D.	Cleburne.
Osborne, E. B.	Cleburne.
Oxford, L. G.	Stephenville.
Painter, F. U.	Pilot Point.
Pabst, O. C.	Galveston.
Paine, J. F. Y.	Galveston.
Palmer, H. J.	Yarbrough.
Palmer, L. B.	Petty.
Palmer, W. B.	Audubon.
Palmer, E. E.	Kerrville.
Palmer, J. W.	Windom.
Pannell, J. A.	Martindale.
Pannill, Wm.	Corsicana.
Park, J. W.	Kaufman.
Parks, J. M.	Elkhart.
Parish, A. L.	Teneha.
Parsons, E. B.	Palestine.
Parsons, S. C.	San Angelo.
Parker, P. E.	Bay City.

Parker, W. S.....Calvert.
Parris, C. J.....Audubon.
Parr, A. B.....Tulia.
Parr, L. E.....Runge.
Paschal, Frank.....San Antonio.
Patterson, T. M.....Duster.
Patterson, W. E.....Hondo.
Patrick, W. R.....Brackettsville.
Patton, O. .....Madisonville.
Patton, W. D.....Amarillo.
Patton, A. .....Mineola.
Paul, M. M.....Center.
Paxton, J. H.....Elkhart.
Payne, J. H.....Holland.
Payne, J. E.....Grand Prairie.
Payne, J. W.....Rogers Prairie.
Pearce, D. S.....Nopal.
Pearson, O. G.....Seguin.
Pearce, A. E.....Orange.
Pearson, P. W.....Celeste.
Pedigo, H. B.....Kountze.
Pennington, W. H.....Justin.
Pepkin, T. P.....Anona.
Perky, A. B.....El Paso.
Perkins, A. T.....Carthage.
Perry, J. J.....Hempstead.
Person, A. G.....Snyder.
Peters, O. K.....Galveston.
Peterson, W. G.....Port Lavaca.
Pettway, T. R.....Austin.
Pettus, W. G.....Georgetown.
Petree, S. .....Fairview.
Petty, L. E.....Dye.
Petty, S. J.....Springtown.
Phenix, N. J.....Colorado.
Philley, J. B.....Panter.
Phillips, J. D.....Tyler.
Phillips, J. R.....Chase.
Phillips, H. M.....Scurry.
Pickett, W. S.....Karnes City.
Pickens, J. D.....Whitt.
Pier, T. J.....Brenham.
Pierson, J. W.....Amarillo.
Piner, F. E.....Denton.
Pirtle, J. B.....Ivanhoe.
Pistole, S. W.....Seymour.
Pitts, T. N.....Pittsburg.
Pitmann, J. J.....Bagwell.
Poe, A. C.....Carbon.
Poer, J. F.....Poer.
Pollard, W. J.....Kaufman.
Poindexter, J. G.....Bridgeport.
Pool, M. M.....El Campo.
Pope, R. J.....Sweetwater.
Pope, E. D.....Kountze.
Pope, J. G.....Coleman.
Pope, Irvin .....Tyler.
Porter, J. D.....Hutto.
Porter, G. L.....San Antonio.
Post, G. A.....Sims.
Posch, A.....Round Top.
Potter, W. R.....Sunset.
Powell, W. P.....Willis.
Powell, W. M.....Albany.
Powell, J. H. E.....Smithville.
Poyner, I. P.....Montalba.
Prancklaw, W. H.....Prairie Plains.
Pratt, D. T.....Cooper.
Prestrige, B. G.....Alvarado.
Preston, Jno. .....Abilene.
Price, W. J.....Gainesville.
Price, Sterling .....Rucker.
Price, W. A.....Tracy.
Price, S. W.....Graham.
Pridgen, J. E.....Thomaston.
Proctor, T. K.....Sulphur Springs.
Prothro, G. H.....Beaumont.
Puckett, J. M.....Hainesville.
Puckett, E. .....Amarillo.
Pullin, W. B.....Jacksonville.
Pullen, W. G.....Chester.
Puntch, W. N.....San Pedro.
Quarles, J. M.....Post Oak.
Quillian, C. C.....San Antonio.
Rabb, E. M.....San Antonio.
Radkey, O. H.....Edna.
Radford, G. W.....Quanah.
Ragland, T. S.....Gilmer.
Raines, C. B.....Mineral Wells.
Rains, G. P.....Marshall.
Ralston, W. W.....Houston.
Ralston, J. C.....Galveston.
Ramey, R. L.....El Paso.
Ramsel, P. A.....Thorndale.
Ramsey, J. B.....Alto.
Randall, Ed. .....Galveston.
Rape, W. A.....Victoria.
Rape, T. A.....Ballinger.
Raschbaum, L. B.....Amarillo.
Ratliff, T. J.....Glory.
Ratliff, J. D.....Klondike.
Rather, S. S.....Jacksonville.
Rauh, David .....Houston.
Rawley, Frances .....Galveston.
Rawls, W. E.....Emmett.
Rawls, J. W.....Thornton.

Name.	P. O. Address.
Rawlings, J. A.	El Paso.
Ray, R. P.	Hughes Springs.
Ray, D. M.	Whitewright.
Ray, H. L.	Poolville.
Raysor, P. M.	Bryan.
Reagan, J. H.	Beaumont.
Reagan, W. H.	Penelope.
Remer, A. T.	Dallas.
Read, R. W.	Texarkana.
Read, W. K.	Texarkana.
Red, S. C.	Houston.
Redmond, Henry	Corpus Christi.
Redwine, D. P.	El Campo.
Reed, J. D.	Lampasas.
Reifel, J. W.	Houston.
Reid, V. E. H.	Holland.
Reed, J. W.	Rock Island.
Reed, J. H.	Beaumont.
Reeve, W. T.	Blanco City.
Reeves, J. E.	Orange.
Reeves, L. H.	Newark.
Reeves, B. F.	Dowell.
Relyea, S. C.	Ladonia.
Reynolds, P. D.	Lubbock.
Reynolds, J. A.	English.
Reuss, J. M.	Cuero.
Reuss, J. H.	Cuero.
Rhodes, B. F.	Eolian.
Rhodes, W. P.	Austin.
Rhodes, E. T.	Providence.
Rhodes, J. S.	Prairieville.
Rhoads, H. H.	Vernon.
Rice, S. P.	Marlin.
Richardson, I. T.	Garwood.
Richardson, D. P.	Henderson.
Richardson, J. A.	Seymour.
Richardson, R. W.	Gober.
Richmond, W. T.	Edna.
Richmond, J. M.	Edna.
Richmond, W. T.	Manor.
Rimmer, S. W.	San Saba.
Robinson, J. T.	Jacksboro.
Robinson, W. L.	Bazette.
Robinson, D. K.	Itasca.
Robison, B. B.	Pander.
Robinson, S. S.	Runge.
Robertson, H. W.	Waelder.
Robertson, J. C.	Fate.
Robertson, T. W.	Stamford.
Robertson, G. L.	Leander.
Robertson, P. F.	Montell.
Roberts, A. A.	Kerrville.
Robertson, H. S.	Grapeland.
Roach, F. R.	Martinsburg.
Roach, J. L.	Lone Oak.
Roark, R. H.	Cleburne.
Robertson, Robert.	Wichita Falls.
Roberts, T. P.	Uvalde.
Roberts, J. B.	Woodville.
Roberts, C. H.	Wolfe City.
Robert, J. J.	Hillsboro.
Robinson, R.	San Antonio.
Robinson, J. D.	Waller.
Rochelle, J. W.	Hooks.
Roebuck, L. B.	Sweetwater.
Rogers, W. R.	Landrum.
Rogers, W. J.	Hereford.
Rogers, M. W.	Alexander.
Rogers, W. L.	Houston.
Rogers, I. S.	Frisco.
Rosborough, J. F.	Marshall.
Rosco, I.	Madisonville.
Ross, A. A.	Lockhart.
Ross, H. B.	Del Rio.
Ross, F. R.	Houston.
Rosser, C. M.	Dallas.
Rote, J. P.	San Antonio.
Rountree, W. C.	Pecan Gap.
Rouse, Wallace	Galveston.
Rowland, O. J.	Sealy.
Rowland, R. S.	Sylvan.
Rowe, K. W.	Rural Shade.
Rucker, W. E.	McKinney.
Rumpt, D. C.	Potosi.
Russ, W. B.	San Antonio.
Russell, Ike	Edgewood.
Rush, A. J.	Lake Creek.
Rush, W. H.	Paris.
Rust, E. M.	Merkel.
Sachs, A.	San Saba.
Sadler, J. G.	Henderson.
Safford, H. T.	El Paso.
Samuels, W. W.	Dallas.
Samaniego, J. A.	El Paso.
Sampson, J. H.	Houston.
Sansing, C.	Brookstown.
Sanders, J. T.	Chriesman.
Sanders, A. D.	Raymond.
Sanders, J. M.	Peede.
Sanders, Leon	Edom.
Sanderson, W. S.	San Saba.
Sanderson, G. H.	San Saba.
Sappington, J. B.	Oak Hill.
Sappington, H. O.	Galveston.

Name.	P. O. Address.
Sarter, E. R.	Baird.
Saunders, M. B.	Waco.
Saunders, J.	Orange.
Saunders, Bacon	Fort Worth.
Sauvignet, E. H.	Laredo.
Saylors, A. C.	Bynum.
Scarborough, A. O.	Snyder.
Schramm, C. J.	Fayetteville.
Schmoeller, C. W.	Sealy.
Schaeffer, M. C.	Galveston.
Schnell, J. H.	Comfort.
Schooler, T. M.	Dallas.
Schoolfield, H. F.	Sunset.
Schuster, M. P.	El Paso.
Schultz, C. A.	Alvarado.
Scruggs, J. F.	Neal.
Scott, E. E.	Matagorda.
Scott, A.	Hungerford.
Scott, A. C.	Temple.
Scott, M. M.	Brownwood.
Scott, C. T.	El Paso.
Scott, J. O.	Sherman.
Scott, J. W.	Houston.
Scott, H. C.	Sweetwater.
Seay, J. A.	Bonham.
Seay, Dero	Dallas.
Seal, W. H.	Marquez.
Sealy, T. R.	Santa Anna.
Seastrunk, H. E.	Orange.
Seastrunk, J. C.	Orange.
Seel, G. A.	Corpus Christi.
Seitz, C. M.	Trickham.
Self, T. N.	Cleburne.
Self, J. E.	De Leon.
Sellers, R. B.	Comanche.
Sessums, J. R.	Dublin.
Sessions, E. L.	Hillsboro.
Sessions, I. P.	Rockdale.
Sewall, F. B.	Marlin.
Seymour, F. B.	Beeville.
Seymour, R. H.	Warrenton.
Seymour, C. L.	Bonus.
Shaffer, C.	Gardner.
Sharp, M. F.	Rogers.
Shaw, E. M.	Victoria.
Shaw, J. C.	Stranger.
Shaw, E. N.	Cameron.
Shaw, M. J.	Randolph.
Shaw, W. C.	Ola.
Shapard, R. R.	Anson.
Shands, P. C.	Forney.
Sheilds, F. B.	Victoria.
Shelton, E. P.	Dripping Springs.
Shelton, J. D.	Youngsport.
Shell, W. T.	Corsicana.
Shelmire, J. B.	Dallas.
Shell, C. C.	Stamford.
Sherrill, C. A.	Cook's Point.
Shettleworth, J. S.	Pritchett.
Sherman, W. T.	Bloomberg.
Shimer, W. H.	Meyersville.
Shirley, D. G.	Tyler.
Sherrell, M. F.	Montague.
Shoemaker, L. F.	Brushy Creek.
Shoemaker, L. F.	Vaughan.
Sholars, S. W.	Orange.
Sholars, A. R.	Orange.
Shook, W. R.	Emblem.
Short, J. L.	Houston.
Shotwell, C. H.	Gainesville.
Shropshire, W.	Yoakum.
Shropshire, L. L.	San Antonio.
Shuford, F. B.	Wolfe City.
Sibley, A. J.	Creedmoor.
Silman, H. S.	Llano.
Silman, Lee	Olive.
Sims, J. B.	Center.
Simons, J. E.	Bay City.
Simmons, C. B.	Decatur.
Simmons, J. W.	Peaster.
Simmons, J. E. G.	Seymour.
Simmons, F. W.	Charco.
Simmons, D. H.	Southmayd.
Simpson, C. W.	Waxahachie.
Simmons, C. L.	Liberty Hill.
Skipper, R. W.	Lovelady.
Slater, T. S.	Re.
Slagle, M. E.	Ida.
Sledge, J. R.	Stamford.
Small, A. B.	Waxahachie.
Smart, M. P.	Pendletonville.
Smoot, J. B.	Dallas.
Smart, J. H.	Dallas.
Smith, M.	Sulphur Springs.
Smith, R. B.	Quinlan.
Smith, M. D.	Gustine.
Smith, A. B.	Beeville.
Smith, J. G.	Velasco.
Smith, W. I. M.	Chireno.
Smith, C. F.	Fairdale.
Smith, J. C.	Starrville.
Smith, M. M.	Austin.
Smith, I. S.	Burgess.
Smith, Edgar	Mendoza.

Name.	P. O. Address.
Smith, F. M.	Blue Ridge.
Smith, J. A.	Plano.
Smith, Lindley	Dallas.
Smith, F. B.	Houston.
Smith, S. J.	Houston.
Smith, B. F.	Hillsboro.
Smith, P. L.	Houston.
Smith, J. S.	Cash.
Smith, W. J. S.	Weiland.
Smith, O.	Cumby.
Smith, J. B.	Crockett.
Smith, C. E.	Waco.
Smith, R. W.	Clinesburg.
Smith, J. M.	Waukeegan.
Smith, W. R.	Colorado.
Smith, H. R.	Detroit.
Smith, C. A.	Tyler.
Smith, S. L. S.	San Angelo.
Smith, A. A.	Goolsboro.
Smith, J. L.	Victoria.
Smith, W. H.	Alba.
Smith, E. C.	Yantis.
Smith, J. E.	Cotton.
Snyder, J. W.	Brownwood.
Snyder, E. W.	Brownwood.
Southern, G. W.	Lincoln.
Southerland, W. S.	Trenton.
Sowell, L. B.	Forney.
Spain, P. A.	Paris.
Spaulding, T. E.	Greenville.
Sparks, Geo.	San Saba.
Sparks, W. J.	Poolville.
Spann, J. T.	Chappell Hill.
Speaks, E. T.	Greenville.
Spearman, G. T.	Crawford.
Spear, J. D.	Woodville.
Speer, A. H.	Madisonville.
Speer, J. A.	Itasca.
Speer, G.	Hennessey.
Spencer, T. C.	Terryville.
Spencer, B. F.	Weston.
Spivey, W. J.	Teneha.
Spohn, A. E.	Corpus Christi.
Spradlin, J. Q.	Stanley.
Spring, J. V.	San Antonio.
Springer, J. D.	San Antonio.
Sprueill, Z. J.	Jewett.
Stafford, Brooks	Galveston.
Staples, T. O.	Wylie.
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